CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

ENERGY EFFICIENCY COMMITTEE

SECOND QUARTERLY MEETING

CALIFORNIA CLIMATE CHANGE ADVISORY COMMITTEE

AUDITORIUM

BUILDING 20, 1ST FLOOR

3000 HANOVER STREET

PALO ALTO, CALIFORNIA

THURSDAY, OCTOBER 7, 2004

10:15 a.m.

REPORTED BY:

JAMES A. RAMOS

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APPEARANCES

COMMITTEE MEMBERS PRESENT (and/or their representatives)

James D. Boyd, Commissioner, Energy Commission

Ralph Cavanagh, NRDC

Cynthia Cory, California Farm Bureau Federation

Peggy Duxbury, Calpine

Ben Knight, Honda

Jason Mark, UCS

Michael Meacham, City of Chula Vista

Denise Michelson, BP

Robert Parkhurst, Hewlett Packard Corporation

Wendy Pulling, PG&E

Jan Schori, SMUD

Abby Young, ICLEI

Michael Mastrandrea, Stanford University

Howard Gollay, Southern California Edison

Rob York, UC Berkeley Center for Forestry

Josh Margolis, Cantor Fitzgerald

STAFF PRESENT

Susan Brown,Transportation Energy Division

Tim Olson, Energy Technology Export Program

Pierre duVair, Climate Change Program Manager

APPEARANCES (continued)

ALSO PRESENT

Michael Hanneman, UC Berkeley

Ned Helm, Center for Clean Air Policy

Lainie Motamedi, California Public Utilities Commission

Doug Wickhizer, California Department of Forestry

Alex Tseng, member of the public

Ed Maurer, Santa Clara University

Larry Dale, Lawrence Berkeley Laboratory

Bud Beebe, SMUD

Michael Ashford, The Climate Trust

David Coale, Arterra

David Ritson, Stanford University Professor Emeritus

Jane Turnbull, League of Women Voters of California

Helen Mulligan, Institute of urban and Regional Development,

UC Berkeley

Greg San Martin, PG&E

Chuck Hakkarinen, member of the public

I N D E X

P R O C E E D I N G S

COMMISSIONER BOYD: Good morning. I think we have more than a quorum here, and we can get started. I'd like to welcome everybody to this second -- it says "quarterly meeting", I hope we made that quarter, but anyway -- second meeting of the California Climate Change Advisory Committee.

In a moment -- yes, I was going to say, are you hearing me? Can everybody out there hear me? And I'm talking a little loud, so you're going to have to speak up as we go around the table.

But thank you to everybody for attending this meeting, and I want to particularly thank our host, Robert Parkhurst and Hewlitt-Packard, for allowing us the use of this facility. It's a very nice central place to get to, the getting to being quite an interesting experience in driving the California freeway system. I did have two people in the car that said use the diamond lanes, and I snuck over the back way from Sacramento. I knew if I came through the city I'd need an inflatable person or be stuck by the side of the road.

In any event, I guessed how long it

would take and it actually took a little bit less. I know I've talked to others of you in the parking lot already, and we've shared stories of getting here. But this is a beautiful facility, and much better coffee than I served in Sacramento, I'll tell you that. Thank you very much.

I would like to welcome the newest member of our Advisory Committee, Wendy Pulling with Pacific Gas and Electric, to her first meeting. Welcome Wendy, it's good to have you here.

I don't see another individual, Peggy Duxbury, who would be sitting next to Ralph, is apparently not here yet. I say that because I'm told she will be here, and she wasn't able to make the first meeting. I was going to welcome here, so I'll do that later, she's with Calpine.

And I think what I'm going to do is just go around the table and ask everyone to introduce themselves, both in terms of who they're representing both in terms of organizations, and we have a few people sitting in for other people, and if they'd mention who they're sitting in for, that would be appreciated.

Just some comments, we are recording

this public meeting for both posterity and for use of the staff in helping compile the results. A little later I'll comment on what a wonderful chore that was, having the comments from the last meeting. This is a very talkative group and we had lots of comments.

So I ask you to speak up, and I think the black microphones on the table belong to james down here, our Reporter. The silver microphones are the PA system, so in terms of just being heard by the public, concentrate on the silver microphones. I think James' recording system is pretty sensitive.

And when the public or the audience wants to say something please use the microphone in the middle of the room. If the Advisory Committee members would just use their first names as they're speaking so James can identify who you are, he's going to get to know you real quick.

But members of the public, if you would say your name, and if you have an affiliation and want to mention it, but spell your last name for the Court Reporter, we'd appreciate that. So, that's the housekeeping responsibility that I remember I have to talk about today.

And with that, Robert, why don't we start with you and go around the table, if you would.

MR. PARKHURST: Thank you, Commissioner Boyd, and welcome to HP. One thing I'd like to add on to the Commissioner's opening remarks is that we're also being broadcast over the web today, and that is, you can get that information on the Energy Commission's website, but for those of you here that's where some of the presentations will be.

COMMISSIONER BOYD: Thank you for saying that, cleaning up after me, that's --

MR. PARKHURST: So, my name is Robert Parkhurst. I am a Environmental Program Manager here at HP. And today I'm representing both HP and the Silicon Valley Manufacturing Group, a group of 190 Silicon Valley companies who work on policy development for the state of California.

So, it's both an honor and a privilege to be here, and to host you here today, and I hope we have another good meeting. Thank you.

MS. CORY: Hi, I'm Cynthia Cory with the California Farm Bureau, which is a nonprofit organization of 53 county farm bureaus, the

farmers and ranchers, there are about 87,000 farmers and ranchers in California.

MR. SCHORI: Good morning, I'm Jan Schori, I'm the General Manager of the Sacramento Municipal Utility District. We're the electric supplier for Sacramento County and a little bit of Placer County, a publicly owned electric utility.

MS. PULLING: Okay, now we've figured out the microphone technology. I'm Wendy Pulling, I'm the director of environmental policy at Pacific Gas and Electric Company. We are an investor-owned utility and serve one in 20 Americans with their electricity and natural gas. Happy to be here.

MS. MICHELSON: Thanks, Wendy, and welcome to you too. Good morning, my name is Denise Michelson with BP. I've been Director of Environmental Policy for the California Issues Group. For those who are not familiar with the BP name, it's formerly British Petroleum, and as a result of the merger with AMOCO and Arco we are now BP.

MS. YOUNG: I'm Abby Young, I am with the International Council for Local Environmental Initiatives, and I'm the Director of our U.S.

Cities for Climate Protection Program. We work with about 150 cities and counties in the U.S. to reduce greenhouse gas emissions and 25 or 30 of those are here in California. So I suppose I'm representing the local government stakeholder group.

MR. KNIGHT: And I'm Ben Knight with Honda Automobile Engineering. I work on our low emission and advanced powertrain and alternative fuel programs.

MR. MARK: Jason Mark with the Union of Concerned Scientists. UCS is a 35 year old nonprofit organization focused on research and analysis and policy work around environmental issues where science plays a role.

MR. MEACHAM: Good morning, I'm Michael Meacham with the City of Chula Vista. Chula Vista is the second largest city in San Diego County, we're about seven miles from downtown San Diego and seven miles from the Mexican border. Among our city's commitments to the environment, and our council and city's community commitment, is that we were a founding member of the International Council of Local Environmental Issues, and we are very pleased and proud to be a member.

MR. MASTRANDREA: My name is Michael Mastrandrea, I'm a post-doctoral Fellow at Stanford University, and I am standing in for Professor Steven Schneider, from Stanford as well.

MR. GOLLAY: Good morning, I am Howard Gollay with Southern California Edison. I'm a Manager in the Corporate Environmental Policy Group. I have a lot of years experience in the climate issue, and I am representing Mike Hertel today, because he has the pleasure of playing golf and taking a trip through the Panama Canal.

MR. YORK: I'm Rob York, substituting for Bob Heald, who is also going through the Panama Canal right now, and I'm with UC Berkeley Center for Forestry, representing the forestry sector.

MS. DUXBURY: I'm Peggy Duxbury, and I direct environmental policy for Calpine Corporation, which is a independent power producer headquartered in San Jose, California. We've got operations across the United States. We operate on primarily natural gas-fired power generation. We're also the largest renewable energy producer here in California through our geothermal operations at the geysers.

COMMISSIONER BOYD: Welcome Peggy, in your absence I was welcoming you earlier to your first meeting and I realized you weren't here yet, but thank you.

MR. CAVANAGH: And I'm Ralph Cavanagh from the Natural Resources Defense Council.

COMMISSIONER BOYD: And Ralph never needs a microphone. Those of us who have known Ralph for years always appreciate his willingness to speak up.

Well, welcome everybody, thank you for being here. Other than Josh Vondoles (sp) I think we've got everybody we're going to have, and I believe he was scheduled to be here. So we'll see. Ann Baker will not be here today.

I wanted to just remind everybody on the Advisory Committee, and tell the audience and tell our listening audience out there, that this Advisory Committee was just created this past July in response to specific legislative direction to the Energy Commission to create such an Advisory Committee.

And in the statute it said that the purpose of this Committee is to make recommendations to the Energy Commission on the

most equitable and efficient ways to implement national and international climate change requirements, dot dot dot -- in California, of course.

And so, that is our charter, that is our crusade so to speak, and this is our second meeting to address the programs, the issues, the initiatives that this Advisory Committee may want to recommend to the Energy Commission for use in the state of California in the future.

Under the law, the Advisory Committee meetings are open to the public, thus many of you are here, and we have a webcast audience out there listening. We've verified that there's at least one person out there earlier, so we know the system works.

And later on in the agenda we'll have time for public comment and public exchange. And I just want to emphasize that I really want to facilitate as much, I want to leave as much time as possible for a dialogue and an exchange. It's truly an effort on our part at the Energy Commission to receive advice and counsel and input on what California should do in this arena.

We waited awhile, as I said at the last

meeting when we formed this group, I think we've waited for what I'd like to say is a capricious time in California to address this subject, when it became very evident to the public that California state government was doing things in the climate change arena, and it became very evident to the government, through many public surveys, that the California public was interested in having it's government do things in the climate change arena, so we are at a very prominent position in the timescale of activities in California, I believe.

There are some of us -- I know many people around this table who first got interested, and speaking only for myself, in climate change when my hair was much darker than it is today, and I'm very gratified to see that we've left the on-ramp under the freeway here in California, we're dealing with the issue. And there'll be more to be said about that.

What we're looking here for today is feedback and input and ideas. At the July 15th meeting we received extensive feedback from the members on what specific issues we ought to address, and I joked earlier about the

extensiveness of that extensive feedback.

The staff prepared a summary which you all have, all received some time back, with over 100 specific suggestions. And we had to distill that down from far more than 100, and I even think 100 is far too many, but when you're dealing with a group you don't want to leave anybody's ideas out, so we did consolidate and collapse and try to capture all the ideas, but we've given you a very large list of issues to deal with, and hopefully you've been able to spend some time digesting them, and we can digest them down to something that we indeed can deal with in the future.

And ultimately we'll make recommendations sometime in the middle of next year to the Commission and ultimately to the Governor on what California should be doing next. And we're going to need to prioritize to the best of our ability of those topics that we ultimately do choose, and I'm expecting the staff of the Energy Commission and other state agencies with whom we work to digest some of that information and evaluate some of it, and of course not only bring it back to the Advisory Committee but have it for us to use at the policy level in

government.

At noon today we're going to be hearing from Dr. Michael Hanneman of UC Berkeley about a recent study published in the Proceedings of the National Academy of Sciences on climate change impacts to Californians.

And I know that will add to the body of knowledge on the subject of climate change impacts in California and it adds to the work that I've always referenced as one of the major benchmarks, the Green Book I've called it, the report of the Union of Concerned Scientists et al of a few years back on the impacts of climate change to California, because that certainly stimulated a lot of activity.

I had the privilege of meeting Dr. Hanneman -- ah, the Green Book, I actually had it in my briefcase, but thank you Ralph -- had the privilege of meeting Dr. Hanneman earlier this spring at a meeting in Aspen, Colorado of eminent scientists on the subject of climate change.

I noticed that scientists go to good places for their meetings, but they invited one policy wonk, namely yours truly, to the meeting, and we've established a close working relationship

since.

Dr. Hanneman is key to the Energy Commission's virtual research center on climate change, which involves Scripps Institute, UC Berkeley, and the UC President's Office. Dr. Hanneman is leading the economic work that's being done at UC Berkeley for the Energy Commission and for that virtual research center. So I look forward to his presentation at noon, and we'll learn more about the impacts on California, at least those not studied in depth already in that report.

As I said before, I want to maximize the time that you have to provide input, so I will shut up here shortly. I've asked the speakers to try and limit themselves to about 30 minutes. That's a very difficult thing for me to ask of them because they have so much to share with us, but I wanted you to have time to do that.

Our other major speaker, right after lunch today, will be Ned Helm, who is sitting here in the first row, who is -- the Executive Director I'll call you Ned, I'm not sure of your title -- of the Center for Clean Air Policy, an organization based in Washington that done a lot

of work on climate change. And as the name would say, the Center For Clean Air Policy, obviously they started out in a different arena.

And those of you who've known me for awhile know that I've spent 20 years of my California working life in the clean air business, so I've known Ed for many, many years, and it's really great to have him here because the Center has done work nationally and internationally on this subject and will be able to feed a lot of good input to the Advisory Committee.

Lastly, I just want to say that the staff, following the last meeting, did manage to contact most but not all of the committee members on the phone to talk about ideas on priority topics, and to try and understand and help distill down some of the subjects we talked about last time.

And as you see on the agenda, Susan Brown of our staff will be making a presentation, providing the results of that feedback.

A couple of other quick comments. The Energy Commission, which has been up until recent times the lonely locus of a lot of, if not most of, the state of California governments activities

in climate change. Has and continues to work with very closely all the other agencies that have been, some quietly and now some more publicly, working on the subject of climate change.

We are working very closely with Secretary of CalEPA, Terry Tanimen, on the work that they have underway. Of course, we work quietly but closely with the Air Resources Board on their pioneering and very important CO2 tailpipe regulations, and I had the privilege of testifying at their hearing to present the unanimous support of the Energy Commission for the work they were doing.

And we also work very closely with the California Climate Action Registry, and the Energy Commission has been supporting that organization as best it can per the statutes since its creation.

In the Governor's environmental action plan we did ask the Secretary of CalEPA to explore and to perhaps recommend climate change goals for California, and that's an independent activity that is going on within the state. And through this Advisory Committee and through the Energy Commission we will, you know, have a liaison with

that activity, and I certainly take any and everything I learn from the Advisory Committee in these meetings to any discussions on that.

And we have representatives, I notice, in the audience of the longstanding Joint Agency Climate Change team in California that was formed by the Resources Agency about five years ago, and now is chaired by the Energy Commission, which is another state group.

The purpose of me taking you all through this is to just indicate that climate change is not a Johnny come lately or recently discovered issue for the state of California. It pervades a lot of the work of many of the state agencies and it has for quite some time.

It's only risen to the surface more publicly in the last few years as its become very clear to California and many states that it's going to be a think globally act globally type of programming in this country, and the nation/state of California has stepped up to the plate to play its role in that, along with other states and provinces of Canada and other countries that Ned will tell us more about. So --.

We will share the comprehensive set of

strategies that this group generates with all others that we work with, and therefore what I would like to say is that today what we would really like to see-- and I'm sure we won't finalize it today -- but we'd really like to put our work to, by the end of the day having a pretty good idea of what a priority list of strategies would be that are deserving of further evaluation and discussion by our staff and discussion by this group in the future.

Because, as I said earlier and in the previous meeting, our goal is to take recommendations to the Energy Commission and others, like CalEPA, Secretary of the Resources, and ultimately the Governor by July of next year.

So with that, let's see, housekeeping, it's being taped, transcribed, people out there know hopefully if they're listening on the webcast and discovered how to find us they can participate later on during the public discussion by calling 888-820-8951 and reference call leader brown. And use passcode 46152. This is all listed in the notice, but in case we picked up some people through the Internet ether I wanted to mention how they could participate later on when we have an

open session.

And of course at the end of today's meeting we'll try to decide when and where to meet next. Although my personal experience down through the years is that you can never really do that at a meeting, you start checking people's calendars and etc., etc. Since it's roughly every quarter we'll try to do it that way.

Okay, so I can quit talking here shortly, I'm just going to take a quick look at the agenda, and it says that I'm to review today's meeting objectives. As I said, finalize scope of activities, we're going to review the greenhouse gas emission trends in California today, we're going to receive an overview of existing policies and programs, and we're going to hopefully talk about alternative measures to reduce greenhouse gases and to recommend next steps.

With that I would like to turn to the first really major and important piece of the agenda, which was to ask for any comment, feedback, what-have-you, on the September 7th letter that we provided you, which really was the staff's summary of the July 15th meeting.

And I'm going to open the table for

discussion on that point now, which is good timing since I'm running short of voice anyway. So, I will throw the floor open to anybody and everybody who'd like to make comments on this topic. Additions, corrections, distillations would be welcome. The floor is open -- the table is open. Ralph?

MR. CAVANAGH: Mr. Chairman. A couple of comments. First, just at the outset I want to note my appreciation, which I suspect all of us share, for the efforts the Energy Commission staff has made since the last meeting to distill a very complex discussion. And also to inform us on everything that has happened since the last meeting that bears our charge.

It's enormously heartening to note that, since three months ago when we last convened, California has adopted greenhouse gas emission standards for vehicles. The final steps have been taken to formalize the Energy Commission's equipment and building efficiency standards, Public Utilities Commission has adopted the most aggressive targets for energy efficiency and natural gas efficiency in the country.

And one of our challenges in providing

useful assistance to California government is to make sure that we are well-informed of all that the California government is already doing. And I want to note my appreciation to Susan for getting all of that around so we all have had a chance to become current.

Mr. Chairman, I think one of the unappreciated values of this forum -- and I just want to note it for a second -- is that this was true at the last one and will be true at this one with the presentations by Susan Brown, Michael Hanneman and Ned Helm, what is evolving here is an extraordinary quarterly forum addressing government officials in California on the issues and challenges of global climate.

It is notable that no such quarterly forum exists, as far as I know, at the federal government level, where of course it is most needed, or in most other states. And I for one hope this is an example that others emulate, even independently of the value of the advice you get in the forum itself has real value.

The final thing I would say about the materials being presented is I think there is value in, at the basic thrust of your letter is to

suggest the value now of providing sub-committees, I think that's a reasonable set of specialties that you've set out, and I'm happy to dive into that.

And I'm also happy to get into the question of recommendations, where the one thing that I want to emphasize in terms of all the richness of the material we have is first to make sure that we are all clear on what's already happening, and then the charge is to identify challenges over and above that where we can be helpful.

For me I think the place where I hope we can focus at least part of our time, and possibly one or two of these sub-committees will be able to do it, is to assist the Governor's initiative on global climate change which California has launched with Oregon and Washington, where the very important precedents established in the last three months have a chance to get some traction and purchase in two very important neighboring states.

And for me the extent to which we can assist in refining those initiatives that you've already at the Energy Commission started to

develop with Washington and Oregon is an opportunity I'd be delighted to take up with the rest of my colleagues.

But thanks for all you've done since we last met.

COMMISSIONER BOYD: Thank you. Other comments? Suggestions?

MR. MARK: I was going to perhaps add to that excellent introduction and also offer some more things, but I wanted to suggest here that we have a fairly exhaustive and perhaps overbearing list and it seems to me there are a couple of ways to -- what I was going to suggest is that we have a somewhat overwhelming list of options here, and it seems to me there are a couple of perhaps categories that occur to me in reading through them, in trying to sift through them and and kind of put them in bins, as I'm wont to do as an engineer.

And one is to think of strategies that we are already are doing, and as Ralph suggests, looking for opportunities to both recognize them, number two think about implementation challenges because having these new policies on the books are invaluable but actually getting them into practice

is I think an important step, and then third of all exporting those to neighboring regions for example by the Tri-State Governor's Initiative.

So that's one category, what we're already doing. Number two I think would be thinking through fromm a sector by sector basis what additional opportunities exist. And some of those are articulated in the agricultural, forestry, transportation group that the staff does an excellent job of summarizing the list. And I'd be eager to continue as a group to sift through that list and explore options that appear interesting out of what is essential a pretty long list, so that we can start thinking about some higher priority items.

And then the third -- so there's existing and what we can do from a sector basis -- and then the third category which is noted in the staff summary, are opportunities for thinking a little bit broad regional items, these are economy-wide types of efforts, and that's one that I think would be helpful to explore, although at least in the short-term I'm much more hopeful about these sort of sector based policy ideas floating up from the bottom.

COMMISSIONER BOYD: Thank you, I think those are good points. I'm also beginning to realize that I'm beginning to expect that we will continue this dialogue after we've had the three presentations, which may stimulate some additional thinking and ideas and allow us to supplement, complement or consolidate some of what we've heard.

(phone operator interruption)

COMMISSIONER BOYD: In any event, we'll pick up some more ideas and probably be able to inject them into our closing and probably penultimate discussion later in the afternoon. I'm just reminded that Ralph will be brought up even more to speed on what's going, and everyone will, on what's going on in the Tri-State Initiative, as well as Ned telling us about what's going on in the world, and the rest of the country, since we are supposed to really focus on things like that.

As I looked at this I realized it's a little early in the morning to be able to just instantly distill all of this into what we want to do next. In any event, thank you Jason. Any other comments? Robert?

MR. PARKHURST: In looking through all of the information I second what Ralph and Jason have said, but to me it looks like we don't have an overarching strategy, a single point or goal to shoot for, or a set of goals. And maybe Jason's comments are the beginning of that.

But what we're seeing coming out of the Northeast and the six northeastern states, and some of the specific states, our goals, our objectives, our mission, our visions, items of that nature that businesses, communities, environmental groups across the board can all be shooting toward.

And I think that's something that will be very beneficial. Because there is so much wonderful work that's going on here right now, but there isn't any one place to kind of channel it and direct it so that there is an overarching impact, so that we can organize together all of these somewhat sector-based or region-based opportunities.

(phone rings)

COMMISSIONER BOYD: The beauty and constraints of technology. In any event -- Rob, were you done?

MR. PARKHURST: Yes, thank you.

COMMISSIONER BOYD: All right. Thank you. I think that's a good point, and I'm looking at Ned Helm out there, as he hears more and more of his charge, and the less time we -- well, we need to provide you ample time to explain some of this. Because, as we suspect what's going with the other states, but more importantly with what's going on with the other states, conjoining provinces, and the rest of the world will have an influence on what we might do.

And I would just say, you mentioned goals, and I indicated that there's a separate track going on within California now, the Secretary of CalEPA has been charged to look at the idea of goals, and some of us here are serving with that group, and I know that's a real struggle, and I know from years and years and years of work in this arena that the idea of setting goals is a real struggle.

I mean, to me there's two, at least two paths. There's setting numerical goals, where you have something to strive for. But there's also people who want to set goals for political reasons purely, and when you try to meld all those

together you want to have goals that are meaningful enough that you can actually get to them, or get close to them, and measure progress against plans to fulfill the political commitments that are made, and I think California is wrestling with that right now.

And I suspect this group will have input on that subject, and I suspect we'll rush through some of the strategies that we'll bring up as to when they're feasible and accomplishable, and we'll certainly as time passes have more and more exchange on the idea of goals for California. So -- Michael?

MR. MEACHAM: Yes, I just wanted to add a little bit to what Robert and Jason said, because I appreciate the direction they were taking us. And I wanted to suggest that, in addition to goals, while we have this tremendous diversity and group of folks around the table, I'm really interested in hearing what everybody thinks from their own industry and from their own perspective on the things that they are doing.

And what they think are attainable in medium term, you know, what will it take to make that happen better and get them to the next step.

Is there a single regulatory change or recommendation that they can make that puts more, you know, hybrid cars on the street, or allows PG&E to continue with its leadership in renewables that was mentioned at our last meeting.

I think that that's really, I know I have a couple of ideas and we can get to that of what I think from a local government perspective is important to us, and I think sharing that and providing that information as it moves up, so we not only have goals but some recommendations -- not extremely specific, but specific enough for programs and objectives, that they're not just a regulatory goal, but they are, something that has the potential to institutionalize the benefits of climate change economically, because I think that's been a part of the success that we've had in other environmental programs.

We can make them a part of doing it right, a part of the economic structure and economic development, that it works better for all of us.

COMMISSIONER BOYD: I very much appreciate what you just said, because while I was being candid in sharing the activities to deal

with goals, which are a difficult thing, I very much would like this group to do exactly what you said.

To focus on what have people done, what are some initiatives and strategies that we might pursue and not get bound up in goals, but rather what are strategies that work and over what timeframe they might work, and what can be accomplished, and I'd rather see us build in a building block fashion some kind of a program that is accomplishable.

And it can be done in parallel with and in conformance with any efforts to set goals, but not necessarily be encumbered by that process, so I appreciate what you said very much, bringing us back to that particular point. Anyone else? And I would suggest, as ralph did in his first turn, if you'll give me a hint that you want to be called upon, if you have something you want to indicate.

Cynthia?

MS. CORY: Thanks, Commissioner. Well I was really excited when I got the notes and I see that I'm the number one issue and opportunity. I was delighted to see that.

COMMISSIONER BOYD: I was going to say it's alphabetical, but it's not.

MS. CORY: I know, I looked immediately to see whether it was or not. And I know that's not the case but, you know, wishful thinking.

But I do appreciate the summary of our concerns, I think they're right on target. And I think the comments that have been made by Jason and others are also on target, that, it's nice to see all the things we talked about, now where do we go from here and how do we focus.

And I think if I look and respond to Michael's comments, which urge me to say what I am saying, it's just that from the agricultural point of view what I think we could, as far as immediate strategies and changes, are pretty much encapsulated here, but they still have a long way to go.

We've got an efficient water pumping program going on, but it could be greatly enhanced. And methane recovery is still in the beginnings, it could use a lot of help. The carbon sequestration, I know that we do have a California Energy Commission effort underway, an RFP -- actually, if anyone on the staff has an

update on that for me, I'd like to know how that's going, because I think that's really, really, incredibly important.

Because without the preliminary research, I mean there's a lot of carbon sequestration information research that's been done in the United States, but nothing that's really been done for California. We are so unique with our commodities here, and we have a lot of permanent crops that I think would have a lot of potential.

And our farmers could do maybe some easy things to change their strategies and possibly store more carbon, so -- I know that you, Jason, talked about let's do the research and then figure out the implementation, and that would be one place that I really would want to focus.

If there's anything I get from my participation here on this board that's something I really, really want to see happen and I think has a lot of benefit and could help everyone.

COMMISSIONER BOYD: Thank you. Well, I think when Susan does her presentation she'll do the best she can to catch us all up on all that we're aware that's going on in this arena, and add

to our ability to have some discussion.

I'm reminded of the comment earlier, Jason's I believe or maybe it was Robert, about the suggestion of sub-committees. It was an attempt to suggest that we, the human species, work better when we begin to parse things out in smaller pieces and deal with them. And we do that in a process like this through perhaps sub-committees.

We suggested some topic areas. I would like you to think about them, and maybe at the end of the day, when we've digested all we've heard, decide how many and what subject area which we might want to have.

Because it's going to take, I believe, smaller working groups working with this huge list, and I realize that when the staff suggested that within this time period we're going to digest all this and boil it down that that was a very tall order and not possible but some distillation will take place, some additional information will be added, and then perhaps at the end of the day we can decide on how you can best divide this into meaningful groups and who would like to perhaps work on some of those groups, and in any event, I

ask everybody to think about that as we take in to day what we're going to be presenting.

Josh?

MR. MARGOLIS: Thanks very much, Mr. Chairman, I apologize for walking in late, everybody. So, with respect to the sub-committees, I --

COMMISSIONER BOYD: Josh, excuse me for rudely interrupting you, but since you did come in late, would you tell the audience who you are and who you represent?

MR. MARGOLIS: My name is Josh Margolis, I'm with Cantor Fitzgerald, I'm Managing Director of the environmental brokerage.

COMMISSIONER BOYD: Thank you.

MR. MARGOLIS: With respect to the sub-committees, two things strike me. At the end of this meeting we're halfway through this process, and therefore we should be halfway down or on a glide path to, a clear path to getting it done, and I'm afraid we won't be.

And sub-committees imply further disaggregation, so I would like to suggest that we have ongoing discussions that everybody is invited to participate in, and there are threads of

discussions that are scheduled conference calls and they're ongoing.

So it's not a matter of choosing one sub-committee to be on, it's a matter of choosing the topics that you want to participate in. And those topic discussions get aired not at the next meeting, which will mean we're three quarters of the way done, but at the next conference call that's scheduled before then. It's a matter of concern.

COMMISSIONER BOYD: Well, I think that's an excellent point, and I would like everybody to think about that, because it is another option that you raise is the idea of having lead persons perhaps for specific subjects, but everyone's invited to participate.

And that certainly is a very viable approach, and you are right about time is always rapidly fleeing by, and it's difficult to deal with too much disaggregation, so that's another strategic option we should consider.

Any other comments, questions, at this point? Howard?

MR. GOLLAY: First, I would like to build on what Ralph has said, and I think it's

important that we do get a solid basis on what the activities that we have done as a state have done to reduce greenhouse gas, and I think it's very important to see what needs to be done and to what extent needs to be done in the future, to see what has actually been done to reduce greenhouse emissions.

I think the Registry does help support that. I agree with the comment concerning the idea of multi participation and multi work groups. When I was looking at the list, Mr. Chairman, I was saying we probably want to be in all of these guys.

And the other thing I noticed when I looked at the list is that, from my perspective the most important areas that we can focus on -- I'll be up front right now with you, because I'm research and technology development. California has always been a leader in technology development, it helps grow jobs, it helps grow the economy, and it does a good thing at the same time environmentally.

And so perhaps one of the work groups should be on technology development. That would be equivalent to the research arm, which I think

is also very, very important, that we get a handle on the science to date on the subject. Of course, science is not perfect, information is not perfect, but we need to get a common understanding on what the science is on various sources. Thank you.

COMMISSIONER BOYD: Thank you. Abby?

MS. YOUNG: Thank you. I'm very encouraged to see these great notes and agenda that staff have developed, and also wanted to mention, Mr. Chairman, that your introductory comments I think give us a lot more clarity and focus than we had this morning arriving here.

And I'm very encouraged to hear the comments everybody is making, because they all seem to fit together very well. I think in our first meeting, it was our first meeting, and the nature of first meetings is that we're kind of all over the map, but we seem to be honing in on something now, which is very exciting.

The one thing that I wanted to quickly mention, before we go into the presentations, because I'm hoping that possibly this could be mentioned or commented on in the presentations, the issue of having two different kind of tandem

tracks if you will.

Ours, which seems to be focusing more on actions, and CalEPA's, which seems to be focusing more sort of on the setting or the broad goal or the targets, which is great, that's terrific.

Those two tasks are intertwined by nature, because the measures or actions, whether they're existing or future or both, need to somehow relate to what the baseline and the targets are, to make sure that our plan is doing its job and that we're going to get where we need to go given the state's target.

So through the process in the course of the year it will be great if staff can just keep us comprised of the work that is happening elsewhere on that other track, so that we can make sure that the work we're doing jibes, and at the end of the day or the end of the year we're going to have something for the state that provides a real good comprehensive strategy, given those two separate tracks.

COMMISSIONER BOYD: Your point is an excellent point, and try as I might to separate the two, you cannot in fact. The success of goal setting is dependent upon a very large menu of

strategies and actions that could be taken, so that one could actually fulfill the goal rather than just set a numerical target and hope you get there.

So frankly I see the work of this group as being incredibly important in terms of suggesting strategies and compiling a menu of strategies that such a diverse and expert group see as viable and correct for California.

I see that as incredibly helpful to those trying to wrestle with the idea of setting goals, because I know from sitting in the room, if you don't have strategies how do you know? You know, that you're not sticking your neck out so far that you're going to embarrass your Governor by not getting there or etc., etc.

So, I mean, you're right on, and I see this as a major foundation for that effort. And I know CalEPA's listening. Yes, Jan?

MR. SCHORI: I want to endorse the comments that you just made and that Abby just made and that Jason made. I was sitting here thinking about the interesting group that we have, with so much expertise and knowledge, almost across industries and representing all segments in

california.

But if I take a step back and I'm thinking about the role of this group in terms of the statute it says we are an advisory group to the state. And I'm trying to figure out -- I think everyone agreed to be on this because we want to advance the cause so to speak. So my thought would be, if the state's already doing great in some areas, then we shouldn't spend our time on it.

Because this is a group that's got a very limited charter and not much time, as Josh pointed out. So I would be looking for how do we best leverage the talents and skills of the people around the table in a very short time frame to find the tipping points or whatever terminology you want to use, that would advance the ball.

And I particularly like Cynthia's comment, because I was sitting here thinking about there are certain quick hits for farmers that we could probably endorse. There are probably certain quick hits for utilities that we could endorse. So I'm just encouraging us to think very practically that if other parts of the state are working on goals then maybe this group shouldn't

get so focused on trying to develop a goal, but come up with things that the state could do to advance the ball.

COMMISSIONER BOYD: Well, I think you just captured and catalyzed kind of what I hope the dialogue Abby and I had, and I think your point's a good one. I am reminded by something that Ralph said in his opening remarks about, you know, what's California doing, and I appreciate his appreciation for the staff's effort to tell you everything that's going on, and I don't want to get too far into Susan's presentation.

While Ralph was talking I noted in the margin of my notes that, something I wanted to be sure and reference today somewhere along the line and maybe this is a good time, that I see as a major policy document in preparation that this group will influence is what I'll call the 2005 Integrated Energy Policy Report of the state of California.

And as I think I told you in our first meeting, that the Legislature, in its wisdom, after the collapse of, the sky fell on the electricity market -- and Senator Bowen, she deserves credit -- passed legislation asking the

Energy Commission to do an Integrated Energy Policy Report.

And we did one in the year 2003. Climate change was singled out as one of the many, many elements that needed to be addressed. They had two major recommendations, both of which are being implemented.

One was to suggest that the PUC really ought to include in the procurement program the issue of climate change, and has been indicated earlier they have done so, and the other was to tell the Energy Commission itself that it should include in its power plant siting process the emission of greenhouse gases as the, among the emissions it takes account of in power plant licensing.

And we are doing that, we are going through the -- unfortunately, but that's democracy -- regulatory process that you go through to change regulations to do just that.

Well, that's just an introduction to the fact that right now we're holding hearings -- I'm looking at Jane Turnbull out there -- the 2004 update to the Integrated Energy Policy Report. And I guess I should say that the beauty of what

Senator Bowen did is create not a single report that requests the results in a report that goes on a shelf, but it is a real time ongoing all the time dynamic process.

An every other year major report, intervening years work on two or three of the major things that were identified. In 2004 we're dealing with renewables, the huge political issue of aging power plants, and transmission. In 2005, a process we've already started, climate change is already on the agenda. That report will be finished in November 2005, the product of this group will be very instrumental in influencing the policies included in that document.

And I'm referencing it in depth right now because I've been incredibly encouraged by what I've heard the past several weeks as we hold hearings throughout the state on the 2004 update, and that is the recognition by a lot of people that this document needs to be taken seriously and should be a major policy document that any administration takes into account in planning its energy future, etc.

And I've heard that from people inside the administration as well as representatives of

the Chambers of Commerce and local energy planning folks. So it's been an infusion of enthusiasm for those of us putting in an incredible amount of time into that to see that it will have some impact.

So I just invite you to the knowledge that putting climate change, as we will in that document, will indeed influence some state policy as it relates to certainly energy, and of course the production and use of energy is almost public enemy number one, is a major contributor to the issue we're dealing with here.

So, anyway, end of sermon. Ben?

MR. KNIGHT: Jim, I would be very interested to hear your comments some time, maybe for example next meeting, in setting goals, climate change goals, on what some of the alternative concepts are of establishing that goal, and what's kind of good and bad of each.

And one of the things on my mind is, from Jan for example we hear the importance of process. And sometimes the goal, politically or otherwise driven based on the climate and a goal towards 500 part per million, can dictate certain approaches that actually may not be a good

approach as it may fail.

So I think that would be very educational to us to hear some of the different alternatives of setting the goals, what the implications are good and bad.

COMMISSIONER BOYD: Point well taken. I'm kind of expecting that Ned Helm's presentation will help answer some of that for you as he tells us, I presume, what other states, provinces and nations have perhaps done in this arena.

Wendy?

MS. PULLING: I hesitate to speak as a representative of public enemy number one, but let me just build on what I thought were fantastic comments by Jan and Abby and Jason and others to help us figure out how we can structure our meetings and process going forward.

One of the things that jumps out at me from the list is some of the synergies between the different elements that are on the list. And I would hope that, as staff works to help us figure out how to be most productive here, that we think about what are some of the areas where there eis overlap and synergy. The ag sector and the electric sector are perfect examples, whether it's

methane digesters or efficient pumping, etc.

The other thing I think that's so exciting about this is that it does give us the opportunity to look for ways to build partnerships, either as a formal part of this process or sort of the offline networking that we can all do here, and I think that needs to be recognized here as part of the unique task of this Commission is that we may be able to find not just synergies between issues but partnership opportunities that can help us really turn this into a place that produces good results.

So I thought I'd offer that up. Thank you.

COMMISSIONER BOYD: Thank you for your comments. First, I would say I did not single you out as public enemy number one --

MS. PULLING: I know.

COMMISSIONER BOYD: -- and this is an interesting thing. Everybody talks about the energy crisis of 2000-2001, and I keep saying "no, the electricity crisis." We have crisis in the other two legs of the energy stool, natural gas and petroleum as well, so you're but one-third of the public enemy --

(laughter)

-- no, I'm -

MS. PULLING: Thank you, I feel better.

COMMISSIONER BOYD: In fact, Ben ought to be feeling the most sensitive now, since transportation was recognized as the biggest contributor, and the Air Board took action there.

QQuickly, you said two of the words that I put on my list of magic words that I always like to hear, synergies and -- which gets to another favorite thing of mine, since my academic training is both engineering and business administration -- systems analysis, the synergies between various systems, and you pointed that out well.

And the other one that I've learned from too many decades in government is partnerships. And quite frankly, I'm one of those who's gone from, as an early regulator, resisting partnerships in collusion with those bad people out there that I was regulating, to recognizing and identifying the value of partnerships with everybody who's involved, all stakeholders, in making good progress in various areas.

I certainly learned that at the Air Resources Board, and I've certainly taken that to

heart down through the decades, and this group is a partnership as far as I'm concerned, in terms of trying to address the problem. And I agree with you 100 percent.

You said staff could identify synergies and certainly they will, but I'm considering myself a staff person here as it relates to representing the Energy Commission, we're really looking to this diverse excellent group, to having more knowledge about your individual areas of expertise in industries to help us identify what the synergies might be, and help form the partnerships that you see are logical partnerships that we can do.

So, excellent point and I very much appreciate it. Ben, you had your card up, I didn't mean to suppress any contribution from the transportation sector.

MR. KNIGHT: I guess I should say something, since our last meeting I, maybe I no longer need to comment for my industry. At the end of last month our board took action and made extremely stringent requirements.

So, for example for the passenger cars it's about a 47 percent increase in fuel economy

in just 11 short years. For trucks it's something like 30 percent equivalent of fuel economy increase in 11 very short years.

And for my industry, maybe some of you, product industry, we design and manufacture, distribute cars for national markets. So, the point I'm making there is the importance of really national level policy on these kind of reductions.

And another important point is that we need market measures, so if we wanted to make progress here, just the products, I can't do it, the market needs to be moved. And in case of passenger cars, these are very individual decisions, so different from some of the other industries', pretty individual decisions, and I appreciate the notes taken on the writeup on the transportation number three, because it covers that.

It also tends to emphasize the more advanced technologies, like the hybrid and alt fuels. And you tend to need different mechanisms for promoting those technologies, we call them kind of the longer term and more aggressive, versus the incremental, where CARB did at least work with a performance structure, which is, you

know, the right basic structure, to shift the fleet.

COMMISSIONER BOYD: Well, I appreciate you're pointing out the synergy of regulation and the fact that there's a spillover benefit of the greenhouse gas emission regulations of the fuel economy improvement as well. And I appreciate getting a statistic that I didn't have before.

And that just reminds me, so much of the progress that we have managed to make in being good citizens in California with regard to greenhouse gas emission reductions have, up until recently, been spillover benefits of other activities and efforts of the state of california with regard to a consciousness about conservation and efficiency, etc., particularly in the electricity sector, that have had, you know, very positive spillover benefits for greenhouse gas reductions.

And now we have our first real overt effort to control greenhouse gas reductions, with a spillover benefit for fuel economy. Thank you. Anyone else? Josh?

MR. MARGOLIS: And you said it's a 47 percent reduction?

MR. KNIGHT: For the passenger car.

MR. MARGOLIS: And in 11 years?

MR. KNIGHT: Eleven years, 2016.

MR. MARGOLIS: And this is something you have to do internally to the industry, this is a solution that's been mandated internally? You can't go outside the industry to solve this problem?

MR. KNIGHT: Well, very good question. CARB was limited by the Legislature not to include incentives or taxes or change the way to a mixture of the fleet, but I'm suggesting outside of that regulation absolutely, in order to have success or efficiency, we need to do something about the demand side, about the market drivers.

Now, a couple of days ago -- on the national side, some of us are looking forward to the CLEAR Act with some incentives. We had a setback a couple of days ago, again, and the California legislature was one of the people who set it back. But we were very much looking forward to that, that would have helped to promote hybrids and alt fuel vehicles.

MR. MARGOLIS: I guess, where I'm going with this is because of the wisdom of those who

set up this law and the votes that were taken were set up with the scenario where the car industry, the passenger car industry is going to solve the problem internally, which means that the greenhouse gas emission reductions are going to be exclusively coming from this sector, which means that we can't, you can't, reach out beyond your sector to accomplish the same reductions from other sources which may be far less expensive, faster, better, cheaper? Is that correct?

MR. KNIGHT: Well, you're talking about a cost-effectiveness issue, and I have my personal thoughts on that that are a little different maybe. And obviously, to make significant reduction in climate change the public, government, industry, all of us, will have a lot of changes and sacrifice to be made.

But it needs to be shared. It, frankly, won't be nearly as effective, nearly as cost-effective, if the market's not part of it, particularly in the case of transportation.

MR. MARGOLIS: And here, I guess as a committee, I'm suggesting that, we can't turn back the pages of time here, we are where we are, but as we look forward I think that there's another

example that we can look at. We don't have to define a sector and say "you must solve the greenhouse gas, you must reduce your greenhouse gas emissions as follows" through performance standards or through whatever.

We would be well advised to identify a increment of reductions that are required, we think, to get California where it should be with respect to the emission gases, identify that reduction, and then encourage participation from multiple sectors, because we'll end up with more reductions at a lower cost and a faster rate of reduction.

COMMISSIONER BOYD: This is a good dialogue, and I'm going to -- Peggy wanted to say something. A quick comment. ?The work of this group will help decisionmakers address the issues that Josh just raised.

I'm not sure there would have been a faster, better, quicker in the transportation arena since it was the number one greatest, you know, per the inventory it was the greatest contributor to greenhouse gases in California, which is unlike most of the world, and I think we had that discussion in our first meeting.

So, lacking any other approaches, the kind of conventional approach was pursued. I think the contribution this group can make can, say, in steps two, three and four etc., here are other ways to approach the issue of, you know, having the nation/state of California make its fair share.

I don't want to protract this too much longer, as we've eaten way into, I've let the time go to the time we had since we started late, but Peggy, real quick, we've got to get Susan up here or there will be no lunch.

MS. DUXBURY: I'll try to be real quick then, Mr. Chairman. I wanted to echo what Ralph and Jason and others had said about the importance of this group, and I appreciate being a part of it. Calpine's also been very involved in the New England process, and I think one area that we can all really look at as we think through this, particularly for the power sector but it probably applies to others, is this issue of leakage.

It's good that we're looking at what Oregon and Washington are doing and that there are some partnerships, but we also have to look east and make sure that whatever we decide for

California doesn't just export the problem and result in higher greenhouse gases totally, but lower here in California.

So that in terms of whatever we do isn't going to lead to solutions that, in terms of imports, encourage more overall CO2 emissions. I think that's going to be real important.

COMMISSIONER BOYD: You must be thinking of those coal-fired power plants out there.

MS. DUXBURY: Something like that.

COMMISSIONER BOYD: Okay. All right. Susan, if you would please? Help educate us, or catch us up.

MS. BROWN: Okay, can you hear me? Okay. good morning, and thank you all for coming here today. I'm Susan Brown, I'm a Senior Policy Analyst with the California Energy Commission, and I've been asked to make a brief overview presentation this morning to sort of set the context for the featured deliberations of this advisory committee.

But before I do, I want to say a couple of things. First, all of the presentations, there are three of them, are on our website, for those of you calling in. You can locate them at

www.ca.energy.gov, under the climate change program, advisory committee, so they are available, all of the Powerpoint's are available.

And secondly, I'd like to recognize some of my colleagues who are here with me today. First, Dr. Pierre duVair, who's our Climate Change Program Manager. He has been working with us. And Tim Olson, in the back of the room, also with the Energy Commission staff.

I'm also pleased to see that Lainie Motamedi from the California Public Utilities Commission is here. Welcome, Lainie. We've been working very collaboratively with the PUC this year on a number of climate change issues. And Doug Wickhizer is here from the Department of Forestry. So we are well represented here today in the California government.

By way of reminder, I want to review first the charter of the Committee, which was set forth in statutes, Senate Bill 1771 was a bill by Senator Sher, established actually in the year 2000, and the same statute directs the Commission to establish a Committee to recommend the most equitable and efficient ways to implement national and international climate change requirements.

The statute also sets forth a number of criteria for those recommendations, including cost, technical feasibility, current energy and air quality trends, and greenhouse gas emissions reduction and trends.

What we're hoping to get from this Committee today and from the public members, the representative of the public that are here, are answers really to three key questions: What strategies should the state of California pursue in addition to those already under way? What criteria should we apply in arriving at these selected policy measures? And thirdly, what are the primary policies that warrant further indepth evaluation by the Advisory Committee and the staff?

I'm going to briefly review first greenhouse gas emission trends in California. As many of you know, emissions of greenhouse gases are large and growing in absolute terms in California relative to other states, and the primary causes are our robust economy and population growth.

Based on the state's official forecast, by the Department of Finance, we're growing at a

rate of about two percent per year. And California's population is expected to continue to grow robustly in the future.

This is both a boon and a problem for us in terms of greenhouse gases. it is fossil fuel consumption that comprises over 70 percent of the total greenhouse gases, and that's really four fuels: gasoline, diesel, jet fuel, and natural gas.

And, as many of you know, the transportation sector represents the lion's share with roughly 50 percent of total greenhouse gas emissions, with power sectors in second at 15 percent -- but if you include imported power, and we do import about 20 percent of our generation from places like the southwest, coal, we also import hydro from the Pacific Northwest -- but 30 percent of the greenhouse gas emissions are emitted in the power sector.

California as a state represents about one and a half percent of total global greenhouse gas emissions, and six percent of U.S. total. However, if you -- I'm sorry, 6.2 percent, I skipped over the population statistic here folks.

But six percent of total U.S. emissions,

but what we've learned recently in our work with the states of Oregon and Washington is that, if we collaborate with other states, for example Washington, Oregon, and California combined represent about nine percent of total U.S. emissions.

And if we were ranked as a country globally we'd be 7th in the world in terms of GHG's, that's just the three states, California, Washington, and Oregon. And global emissions are still rising faster globally than California emissions.

Again, four fuels -- gasoline, diesel, jet fuel, and natural gas -- comprise the bulk of the emissions of carbon dioxide, as shown in this slide. And with the rate of growth of about two percent per year you can see that between now and 2020, unless very aggressive policies are put in place, we'll continue to increase our GHG's.

This is all, by the way, in your handout, so I'm going to just roughly go through them in a quick way. Mobile sources are half of the emissions of greenhouse gases. In terms of carbon dioxide I want to point out first transportation is the largest share with 52

percent, followed by electricity generation.

And so, to not leave out our partners in the oil and gas industry, crude oil extraction and refining is ranked third, with roughly twelve 12 percent.

California's had aggressive policies in place since the 1990's, which in our mind have numerous co-benefits for climate change.

These are not new to any of you think, but energy efficiency, renewable development, expanding markets for alternative fuels in the transportation sector -- which has been I must admit a challenge for us -- high efficiency gas generation, I think there's renewed interest among the power sector participants in things like integrated gas combined cycle technology. Some of these things will require technology breakthroughs, however.

Improving forestry management is one of the topics that we continue to debate in the Joint Agency Climate Team, as Doug Wickhizer can testify, and it's been a subject for the California Climate Action Registry, who is preparing final drafts on forestry sector reporting protocols, and there's much to be done

to reduce vehicle miles traveled, which is a subject that we're hoping to get some help from this group to better define.

Briefly, I think Ralph Cavanagh mentioned some of these already. I don't need to probably repeat that the Air Resources Board two weeks ago unanimously adopted motor vehicle standards to set greenhouse gas limits on passenger cars and trucks.

Our building standards are among the most progressive in the country, they have significant savings from these standards. I have provided most of the Advisory Committee members with details on the effects of those standards.

The Renewable Portfolio Standard -- we are one of 15 states in the country that have an RPS. Currently, the adopted policy is that 20 percent of retail sales of electricity, representing about one percent per year, should be from renewable sources by 2017.

And lastly, our support for the California Climate Action Registry, as many of you know, existing law does encourage participation in this voluntary registry and the reporting of direct an indirect greenhouse gas emissions to the

registry.

Many more policies are being proposed, these are just a few of them I wanted to highlight. This legislative session there was a proposal announced by the Governor's office. CalEPA and Resources Agency are collaborating on the Governor's Solar Homes Initiative.

My understanding is that, while the bill was not successful in this session, another proposal is soon to be introduced in the next session to increase the number of solar/photovoltaic cells in new and existing homes.

Another important policy initiative which we've recommended in our Integrated Energy Policy Report, which PUC President Peevey has also endorsed in the Energy Action Plan, is accelerating the use of renewables to 20 percent of retail sales by 2010, as opposed to the current policy of 2017.

And my understanding is that both Pacific Gas and Electric Company and Southern California Edison have said that they can meet that target.

And then, it's important to recognize

the Public Utilities Commission for the recent rulings released by both President Peevey and Commissioner Susan Kennedy, which ask utilities to account for climate change risk in their long-term procurement plans, and also account for greenhouse gases in their efficiency programs, and to broaden participation in the California Climate Action Registry.

Commissioner Boyd mentioned the Energy Commission's Integrated Energy Policy Report, and I think Jim you also mentioned that many of these recommendations are already in process. We are beginning to ask for GHG emissions reporting as part of power plant licensing, and the Commission licenses power generating facilities sized at 50 megawatts or greater in California.

Utilities, per the PUC's ruling, is starting to account for cost of GHG emissions reductions in their procurement plans and filings have been made by all the industrial utilities, and I believe that there is a decision pending by the end of this calendar year in the PUC process.

State agencies have been asked and are incorporating sustainable building designs in their plans. I think the East End Project in

Sacramento is only one notable example.

And lastly, state agencies have been incorporating climate change strategies in their planning documents, and I have listed a few. The state Transportation Plan, we were successful in getting extensive language in that plan last year.

Certainly the Energy Plan, the Public Utilities Commission has now incorporated climate in its procurement process. Department of Water Resources, Department of Forestry and the Air Resources Board are just loaded with examples. So, climate change is a live issue in the California government.

I'm pleased to serve as the state coordinator for the West Coast Governor's Global Warming Initiative which Mr. Cavanagh mentioned earlier, thank you Ralph for that plug. California, Washington and Oregon have been collaborating for nearly a year on a strategy to address climate change in a regional fashion.

In September of 2003 the governors of the three states directed their staffs to come up with a final recommendation on how to address global climate change through both individual state actions and regional actions. We anticipate

the release of this report sometime during October. It is currently with CalEPA.

We have been supported largely by efforts by the Energy Foundation, the Tellus Institute, and also the Center for Clean Air Policy. Ned and his staff have been supporting this work, and as soon as that report is made public I'd like to suggest that we bring that report back to this group and brief them on the details.

But the primary thrust of the recommendations are let's do the easy things first, things like having the state procure hybrids, we're working on the next generation of building standards, the three states are collaborating to try and align their standards. There's talk about common standards for motor vehicles in California, Washington and Oregon.

There's also talk about, you know, an aggressive renewables program, and adopting consistent reporting protocols for measuring greenhouse gas emissions in the three states. And then our hope is that, if we're successful in getting these three west coast states to align then we can move ahead and include other partners,

for example British Columbia is very active in climate change issues, and some of the other states have approached us and expressed an interest.

The other thing that's relevant to this group is that the three states have agreed in principle to establish a regional climate change goal, and that's tied in with the effort at CalEPA that Commissioner Boyd mentioned earlier, and we're expecting an announcement sometime in the spring of 2005. And I'll allow Ralph and others who are involved in this activity to comment further.

But this is a very important initiative for us. It's a way to take, to at least look at 9 percent of U.S. GHG emissions in a tri-state process.

The next part of my presentation really gets at what we need from you. What I've tried to do today is list a number of initiatives which we are planning to evaluate. We are in partnership with, again, the Center for Clean Air Policy, the Energy Foundation, and the Tellus Institute to do some indepth analysis on GHG reducing measures.

So these are some that represent our

list of what we think should be evaluated. So I wanted to get the feedback today from this group. And I think, Commissioner Boyd, if it's okay, I think maybe I'll go through al of them first and then we can come back to sector by sector. This will just take a couple of minutes and then I'd like to really invite some comment.

Transportation of course being the biggest target sector. We do have traveling regulations in play in California for the Air Resources Board rulemaking proceeding. But beyond that, the things that we believe need further evaluation and further work, and in some cases further action by government, is ways to improve the vehicle fuel economy in new vehicles -- and we're talking about national action on the corporate average fuel economy standards; increasing the use of alternative fuels where cost-effective -- and I might add that the Energy Commission and the Air Resources Board last summer, well the summer of 2003, Jim is that right? -- adopted a comprehensive report on a California strategy for reducing petroleum dependence and most of the analysis is already done on these first two issues.

And we did recommend certain niche markets for alternative fuels, which makes sense, not only for the consumer but from a societal perspective. And those need to be further considered I think, and certainly have climate co-benefits.

Reducing vehicle miles traveled through growth policies has been an issue that we've been struggling with in California I would say for at least two decades and much work has been done.

Reducing jet fuel use. Jet fuel is one fuel that the state has very little control over. We don't regulate interstate airline transportation for example, we don't really regulate rail, but jet fuel is one of the prime fuels that contributes to fossil fuel consumption, which contributes to global warming. So that's an issue that I think we need to struggle with a bit.

Ports is also an issue that has surfaced through the tri-states initiative, switching out diesel fuels to low sulphur, ultralow sulphur diesels. For example, very active things are going on in Seattle and Portland on those issues, and through the EPA diesel collaborative.

Public transit. Again, high speed

rails, some of these alternative modes of transportation are things that, through the state Transportation Plan we've been advocating but they don't always get sufficiently funded nor used. So those remain problems.

And pricing options is always a difficult one, but I did put this on the list because I have gotten feedback from some of you advisory committee members on the need to at least take another look at things like seabates that would encourage the use of low carbon fuels in vehicles.

So that's, you know, I could stop here, I think maybe I'll continue and then come back to this slide. Cynthia, you mentioned ag, this is our list. We're certainly hopeful that you're in agreement on many of these.

And forestry management practices is something our Department of Forestry has advocated for many years, and the Forest Practices Act does require prudent management of our state forests. And what we're interested in is seeing more effective conservation practices as well as carbon sequestration, to the extent that the technology can be developed in a cost-effective way.

So again, quite a bit is already happening, but more needs to be done. And then, adopting reporting protocols that certify real emissions reductions, not only for agriculture and for forestry, but for power, oil and gas, and refining. Those are of course activities that are occurring right now through the California Climate Action Registry.

Residential and industrial policy. This is a short list but I think a powerful one. Adopting the next generation of building and appliance standards is on the, certainly already under consideration at the Energy Commission.

Incentives for combined heat and power is a relatively new issue. I'd love to get some feedback on some of these, especially from those of you in the power sector, on how to structure that, how effective it would be. I know Peggy at Calpine has done some work in that arena and PG&E as well.

Expanding the market for solar PV's. SMUD has done excellent work in Sacramento through the Solar Pioneer Program. And we are hopeful we'll get a proposal funded this year to expand solar use in homes.

And also dynamic and realtime pricing is a live issue that we've collaborated on for many years, and I think at the PUC there is much happening there. So again, in the time we have we can't get into too much detail, but I do want to give you kind of a broad brush set of strategies that we want to see further evaluated and supported.

And power sector of course, the second largest of the end use sectors in California in terms of GHG emissions. Certainly we want to encourage additional utility and ratepayer funding for efficiency programs, accelerating the RPS, removing barriers to renewable and distributed generation, and sometime that Ned Helm can inform us about this afternoon is cap and trade economy wide trading programs and carbon benchmarks and allowances, something that our neighbors to the north in Oregon and Washington are not only considering but are actually a lot further along than we are.

So, in summary those are the proposed policies that the staff has put on the table. We'd like your feedback, we'd like to know which of these are the highest priority for this group.

I do have some criteria, some proposed criteria from the staff in your packet, and I'm going to show those in a moment.

So one way to look at this is first to look sector by sector, and then allow some time to talk about synergy, which is something I heard a few minutes ago. And then come up with either a shorter list or an expanded list, depending on the pleasure of the group.

And then we're open to suggestion on how to structure conference calls, working groups, or simply staff analysis that we can bring back to this group with the support of the Center for Clean Air Policy, the Energy Foundation and the Tellus Institute, who are ready, willing and able to help this group with our deliberations.

Back to you, Commissioner Boyd.

COMMISSIONER BOYD: Thank you, Susan. You answered some of the questions that we were cooking around up here at the table, and I want to get some dialogue going here. I want to make one comment basically, the prerogative of the Chair I guess to go first, to make one comment based on, prompted in my mind by your slides but also already prompted in my mind by the exchange

between Josh and Ben earlier about strategies.

Ben made a point of referencing the legislative limitations placed upon the Air Resources Board in pursuing its regulations. Josh, in talking about -- and these weren't his words, but -- cheaper, faster, better. He tried to capture the types of strategies one could consider.

Ben's point was very subtle and may not have been captured except by those of us who live close to Sacramento and the subject, and the point being that, to get that legislation out of the California legislature certain ornaments had to be hung on the tree, and i.e., certain limitations were provided.

Certain things were off the table in terms of exploring. That's politics. The same is true with regard to the so-called AB 2076 report that the Energy Commission and Air Resources Board did and finished in 2003, which was prompted by the first of many gasoline crises we've had in this state.

But the big one of '99 and 2000 prompted all kinds of legislative investigations and turned general investigations and legislation telling the

Energy Commission to look at ways to create a strategic reserve or build pipelines to bring more fuel in, or if all that fails tell us how to reduce our dependence on petroleum.

And in going through the agony of that analysis politics entered the realm and lots of things fell off the table. Not through directions of the legislature, just through knowing how to negotiate in Sacramento, and that was basically any and all pricing options were dropped from that final report because of the political thicket, and because of the opposition of groups that spring up in the name of stop hidden taxes or other of the like when you reference pricing options.

Well, the point I wanted to make is that, at the moment this group has no limitations. We are an advisory group, we can consider the entire gamut of strategies. I think Ben introduced that point, I'm not sure he was going where I'm going, but that reminded me of that.

And I just want to mention that things like pricing options and other things are not off the table, and are probably welcomed by some from a group as prominent as this group is.

In any event, that was my point. Let me

go to Ralph.

MR. CAVANAGH: Just, first, that was a wonderful presentation. A couple of quick comments which might be in the spirit of seeking general agreement. One thing I hope we will do to help the state of California basically present the picture of greenhouse gas emissions and its challenges, there is a change in the accounting that I think is urgently needed.

You have started to make it but you haven't completed it yet. It really makes a big difference, in looking at California's profile, whether out of state power generation is included. You should include it. That is the default option, and since we are using it, since they really are our emissions by I think any fair and reasonable accounting, any global picture that you give should have those integrated in. And it's important to give I think a fair perspective on what the nature of the challenge is and where the big opportunities are.

Second, and this is as much an appeal to my colleagues as to you, Susan has been one of the heroines in moving forward this tri-state initiative on greenhouse gas emissions.

Now just between us in this room, in the confident hope that no one from Oregon and Washington is listening in, I will say that I think that in most categories the state of California is somewhat ahead of Oregon and Washington on major measures to reduce greenhouse gas emissions, but that California has a real stake in helping them make more progress for a whole host of reasons dealing with relieving the pressure on the western power grid, opening up more and bigger markets to the vehicles we'd like to see.

In that effort, when Susan unleashes, as she will shortly, the initial set of recommendations, this group here is a crucial review group with counterparts in oregon and Washington. It is absolutely essential in moving this initiative forward.

And if as I hope the recommendations that Susan and her colleagues produce have broad support within this group, albeit with doubtless some proposals for improvements, it will be very helpful if we can quickly deliver that.

And so I am assuming, Susan, that if you are in a position to show us that very quickly

what I hope you will do is set up a process that allows this group to react quickly, to suggest improvements, but to do all we can to move that process forward,

Because guys, I want to tell you, that process is the one place where for those of you who have been yearning for a goal there is one. Governor Schwarzennegger has embraced the goal with the governors of Oregon and Washington of reducing the greenhouse gas emissions from these three states. That's am important goal.

No company of comparable size, and certainly not the United States of America is doing that at the moment. And as you all know, the trajectory of emissions for the United States as a whole and for most states has been substantially up. California is a happy exception.

But to take these three states together and to try and drive the line down, that is a starting point I think a number of us hope we will get to. And even more inspirational objective, and Ned will be talking about that some. But it is important to recognize we start with the goal, the Governor has embraced it, we're here to find

ways to reduce greenhouse gas emissions in ways that also help California's economy and environs.

And then, Mr. Chairman, the final point -- and so, Susan, you put up a number of options for us -- I must say, Jan Schori got it exactly right, let's figure out where we really need to step in and help. There are some things that aren't broken.

What my two, at least initial suggestions, and I think that we probably could make marginal improvements in a number of places, you went over all of the things that are going on, my two nominations for our consideration in terms of areas where I think we can make a lot of progress, embrace the agricultural sector, that point's already been made, I think -- and Jan Schori's the one to help us do it -- that the public power sector in California needs a look, that we need to be inspired -- with the conspicuous exception of the Sacramento Municipal Utility District, which I here acknowledge joyously, with that specific exception I think it's not possible, I wish it were possible but is not possible for me to say that public power in California is keeping pace with the progress that

the partnership between the Public Utilities Commission and the investor-owned utilities has generated in recent months.

And I hope we can find ways to challenge our friends in public power to match at least the performance of the Sacramento Municipal Utility District and really make that competition for positive actions to reduce emissions real again. And I think, and this is one where Jan will have an absolute veto, but I'm hoping that we can find a way to help there.

The other area where I think there is a lot of progress being made, we have now moved on vehicle efficiency as a co-benefit Mr. Chairman properly calls it of California's effort to reduce greenhouse gas emissions from vehicles, is moving ahead. But policies designed to make it less necessary to drive as much and as far as we do, and you called out a number of them, Susan. I do think they are the next great frontier for the state of California. And I hope we can dedicate at least some attention to that.

And finally, I will acknowledge, and I know Josh will raise it as he has repeatedly and he's right to do it, that to the extent we can

help to deliver more progress and momentum on markets, and market particularly in greenhouse gas emissions, I will say, because Peggy is right to continuously emphasize issues associated with leakage and making sure that those markets are capturing all the emissions that matter, that I hope that part of that discussion leads directly to what we can do here in California to help establish the national market in greenhouse gas emissions that I think are the ultimate objective of almost everyone in this process and everyone in this room.

That that's really what we'd like to see. that it's the paralysis of progress of constructive discussion at the national level that is part of why we are here. And let's not take our eye off that ball. We are not just looking at the development of markets in California, we've got to be thinking of what we can do to help accelerate a national marketplace, which is where we all need to end up.

Now you spend the rest of the day talking about energy efficiency and renewable energy.

COMMISSIONER BOYD: Thank you, Ralph.

Susan, did you have a comment you wanted to make?

MS. BROWN: No, I see a member of the public has his hand raised.

MR. TSENG: My name is Alex Tseng, I've lived here in Palo Alto over 40 years. I've known Commissioner Boyd for many renewable energy recovery systems, but I wanted to comment on Susan Brown's presentation, especially on the selected policy options.

And I notice there's nothing mentioned about individual disciplines, and how to reduce the greenhouse gas effect. For example, we talked a lot about transportation first. How many of you here live in Palo Alto come down to the meeting. Any of you ride a bike? How many of you ride the bus? There's buses all around here.

How many of you really take the public transportation that you have preached here, and you see the bus runs almost empty. Nobody's using it. So where is the self-discipline? And where is the discipline -- not only transportation, on conservation of electricity.

How many of you really turn off your televisions when not in use for example -- good, there's at least one or two of you. I'm just

using that as example. How many of you think about water conservation? Okay. What, we got to do something.

We got to promote these kind of self individual disciplines, especially with the institutional like Hewlett-Packard right here. Look at all the lights that are around here, and we're not using all those. Where are all the institutional discipline?

So I suggest, on your selected policy options, you should include a individual discipline and institutional discipline to cover all this wasted energy.

MS. BROWN: Thank you, sir.

COMMISSIONER BOYD: Thank you. I'm going to go around the table clockwise. Howard?

MR. GOLLAY: Thank you, Mr. Chairman. Excellent presentation. I have a few comments on a few slides. First of all, on the committee feedback needed today, and what strategies should the state of California pursue, and it lists a couple of other ideas, I think one emphasis I have not seen until I saw the slide was what criteria should we use to arrive at selected policy measures? And I think that's an important

question that we do need to answer, because how do you make decisions if you don't have criteria.

I would offer -- and I'm asking a question -- I would offer at least two criteria right now. One would be do things that have multimedia impact, try to maximize activity that not only have CO2 reductions but help our endangered species or minimized smog pollutants and this kind of thing. I don't think we should be emphasizing doing single two in a vacuum.

Secondly would be obviously most bang for your buck. What types of benefits can we make that have the biggest impact for the least costs. Things like this, I think criteria are important.

And now I'll go to some of the slides on here. On the agricultural and forestry policies being evaluated, I wanted, I actually wanted to let the committee here know about something you may not know, especially for Southern California Edison.

The discussion was what our utilities or what our organizations doing? And we do have advanced management, forest management practices at Shaver Lake by our Big Creek hydro operations. And we've made a big point to try and quantify the

CO2 emission reductions from it.

And I want you to know that, for the last year, we've reported to the Department of Energy using DOE's criteria and assumptions, about a 350,000 ton reduction of CO2 from our advanced management forest practices by Southern California Edison.

Finally, on power generation and utility sector policies, I think the first three, increasing funding for utility efficiency programs, the acceleration of the RPS standard, removing barriers to low carbon generation and transmission barriers, I think that these are things we probably could agree with.

I know I won't have total agreement around the table on this, but on a cap in trade, we don't agree with a cap in trade at this time, we think it would be an artificial market where uncertain as to what kind of regulation would occur, and to how it will be structured. I'm not sure we should be focusing on those kinds of activities.

I am sure that we should be focusing on activities that will cause real reductions in CO2 emissions. Thank you.

COMMISSIONER BOYD: Thank you, Howard. Michael?

MR. MEACHAM: Thank you, Susan, for a great presentation, as always. I wanted to try and be brief and stick to the things that I think specifically speak to the city issues, because there are a lot of people that want to talk. And I'll try to write my stuff up and send it in.

But, I've spent a major part of my career trying to get people to use low flush toilets that I think didn't work very well, to try to get people to fluff and fold their trash, and to try and get them to conserve energy. And I think the gentleman from the public that talked about behavioral changes was correct.

We have to tie these infrastructure and technological changes to behavioral changes. But if you believe or have confidence in the statistics, we've had some great successes in those areas, particularly in water in the state and solid waste and all those things, and I think in large part because of the public education efforts.

And Ralph and his colleagues eloquence recently won the day, and we got a little bit of a

difference there on community choice aggregation and how those funds would be administered, but I think it's really important -- again, talking about synergies -- to involve the public, to give them a stake.

That long story short, residential and industrial policies --

MR. CAVANAGH: And we never disagreed on that.

MR. MEACHAM: -- residential and industrial policies. Community choice aggregation has been on the books for two years as of last September. It's gone through a bunch of hearings, getting that done, getting some general support to give local people another option and a choice to pursue renewable energy I think is critical for local government.

It's something the Legislature passed more than two years ago now and it's still in the rulemaking process. The San Diego region is only one of many regions in California that have already set a much higher goal, I believe it's 40 percent renewables in the next 20 years. They can't do that with something like community choice aggregation.

When we've talked to people locally about what they want to do, they're willing to pay to make that leap. They understand the concerns and the implications of not addressing climate change.

Expanding the solar market. Having gone through it personally, having worked with people in our community, one thing that cities can bring to the table in synergy is the, we reduced our permit fee. We did it on valuation like every other building permit. The real cost to us was somewhere between $600 and $700 permit. We do it for $40 now.

In the two years we've been doing it for $40 we have more applications for photovoltaics than we've ever had in the history of photovoltaics, which have been around and, you know, had a chance there for a few years.

But what industry has told me at least, and I would defer to BP here, is that in our program through the CEC and the monies collected from public purpose bids fees for research and development and PV, we need to have a longer term consistent program before they can gear up and mass produce the photovoltaics and get a price

point where people can put them on their roofs and incorporate them into their mortgages and new homes and that type of thing.

They need a program that doesn't change every five years, or it goes down and then we have to re-authorize. they need a more long-term commitment for that. And I'll just stop there. I'll write the rest of our stuff.

COMMISSIONER BOYD: Thank you, Mike. Jason?

MR. MARK: Thank you for letting me slip in as we go around the table here. One thought particularly on identifying the holes, which i think is a helpful way to think about the work going forward, in speaking to Jan and Ralph's comments. One hole that hasn't been mentioned which I'd like to add onto the list would be the freight sector, which by freight and air I mean sort of non-personal vehicle travel, which Susan mentions but by my math counts for somewhere between 15 and 20 percent of the state's emissions inventory, so not at all a small source.

A friendly amendment on the municipal utilities, which I wholeheartedly endorse, would be also to add irrigation districts as an

important participant in the --

MR. CAVANAGH: That's part of public power.

COMMISSIONER BOYD: Yes it is.

MR. CAVANAGH: Emphatically.

MR. MARK: And then I also want to suggest that part of our view here as being sort of a multi stakeholder group is I think to be comprehensive in thinking about the parties you can engage, so I want to make certain we have our eyes for example on the agricultural sector, given its importance to the state's economy, and important opportunities I think for mitigation, and I see that as a priority as well as the priorities for adaption that the agricultural sector is going to be facing over the coming decades.

And then finally I'm going to put in a plug as well as for economy wide thinking in terms of the possibility of California to start establishing templates that can leverage national change in a carbon market. But I also think that we don't have the opportunity to wait for our federal policy to merge, so I'm eager to start exploring what that might look like.

And all of this speaks a little bit to the sort of subcommittee structure that we've been thinking about here, and I guess my vision would be that we might want to think about sector oriented subcommittees rather than sort of functional, we have pure science and we have education and outreach. Perhaps some sector based thinking might be helpful, specifically if we dan identify some priorities.

And then finally we clearly need to have a multi sector subcommittee to think about cap and trade and those types of strategies.

COMMISSIONER BOYD: Thank you. Abby?

MS. YOUNG: Thank you. Great presentation, Susan. Three quick comments. First of all, absolutely 100 percent agree with Ralph's comment on the need to include the emissions from out of state electricity generation.

The local governments in the state, like Chula Vista, that are doing the same process and have done the same process, are taking account of those emissions in their inventories and forecasts and local strategies. so that's my first comment.

Second, I didn't see in the pie chart,

the breakout of emissions, the commercial sector as distinct from manufacturing or industrial emissions. So maybe they're included somewhere and i just don't see it.

That's a very important sector, a lot of our small businesses would fall into that sector and they'd be a very important partner in any kind of implementation on the ground of emission reduction activities, so maybe you can --

MS. BROWN: I could do that.

MS. YOUNG: Okay, great. The third was on this issue of developing a criteria. I think it was your last slide. And I'd just like to point out, Michael kind of co-opting, this is probably something you can contribute better on, but the city of Chula Vista, in adopting its emission reduction target, doing its inventory, developing its local action plan, set up an internal, pretty good, criteria of how it was going to evaluate potential actions to include in its local strategy.

But they did it ten years ago. It might be interesting, Michael, if you could later provide what that criteria was to the committee. Thank you.

MR. MARK: Has it been ten years? It's so tempting, in terms of the bullet points when you look at what can be done, it's so tempting to say "well, why not do this and this and this?"

MS. BROWN: All of them.

MR. MARK: But it's a quicksand approach, it's an approach that I think we've got to resist. If the goal of this committee is not to throw up as many things up on the wall, because it feels good and because you have a gut sense that there's something there, the goal of this group I think is to say how do we channel the energies, the desire, how do we end up with the best result, the best result is the least expensive, most cost-effective, most certain result.

So, for example, when you showed some of the things that you were doing in Sacramento with the west end buildings, etc., what comes to my mind is well, why are you doing this? How do you know this is a cost-effective use of your time? You're doing this because you have to write a report and this is something I can put up on a sign, that's not a good reason to do it.

A better reason to do it is because I

know that I'm going to get a cost-effective, least expensive result. And our group shouldn't have three bullets per sector. We should say well maybe there are some sectors up there that it doesn't make sense to focus on. Maybe there are some sectors that we should not try to come up with emission reduction, greenhouse gas reduction strategies.

We should say statewide, and beyond the borders of the state, what can we do to influence emission reductions, and that gets you back to what's cost-effective with renewable power, with transportation, with the industrial sectors, with the residential sectors.

And if you can't rely upon the individual to exercise self-discipline, all right, then you've got to figure out some other way to encourage that individual to accomplish the reductions, and focusing on the cost-effective reductions is the best way to go, that leads you back into, no surprise, a mark.

COMMISSIONER BOYD: Cheaper, faster, better, I'm paraphrasing your initial comment.

MR. MARK: Yes.

COMMISSIONER BOYD: Denise, please.

MS. MICHELSON: Thanks, Mr. Chairman. Susan, excellent presentation, and thanks for the plug on that slide. I just wanted to go on record, BP might be guilty of making diesel, jet fuel and gasoline. Clean fuels, though, they're all clean-burning fuels, but that little sliver or extraction we don't have any exploration and production operations in California. But excellent.

I wanted to address Mr. Tseng's comment about individual discipline. I participated in the Keystone Center's climate dialogue, and one of the dialogues included automobile emissions, greenhouse gas emissions, and there was a model that contained a behavioral component -- how do you get people into and out of cars, you know, electric cars, hybrid cars.

And the public is very, very finicky. And the emissions forecasts were all over the place when you put in that behavioral component. And on this transportation chart, you mentioned, you know, that even -- and I think that public transportation is great. I grew up in New York City and you didn't need a car.

And I'd love to have that down in

southern California, you know. And even you mentioned, Susan, even if you did have that, how do you encourage people to use it? So that's a very big behavioral component, as well as the not in my backyard syndrome. Because even if you could get people to use the public transportation how are you going to build the infrastructure if people don't want you to dig up their yards?

And so, having said that, if we decide when we prioritize these strategies I think it's very important that we incorporate that behavioral component somehow, whether it's education, or the stakeholder process where these communities are involved in that process. Thanks.

COMMISSIONER BOYD: Thank you. I thought BP meant beyond petroleum. Wendy?

MS. PULLING: Thank you. Susan, commendations on your presentation. Two points. I must echo Ralph's comment about the renewable portfolio standard. Two out of the three investor-owned utilities in California will meet the RPS by 2010. I think Sempra's doing its best to catch up.

Where there is still room for improvement, because the Renewable Portfolio

Standard does not apply to public power, is in the public power sector with the exception of SMUD and I believe Palo Alto. So, I think if we're going to talk about accelerating the RPS that's not really the issue. The issue is expanding the scope of it.

Second point, building on Denise' and Mr. Tseng's comment, public education. Is it the right time to come out with a sort of the 30 simple things Californians can do to help protect the climate? And could we use some of the success stories from folks around the table to showcase actions that our customers or citizens can take in this area?

Just another idea. It's obviously a specific project, but I do think that the public education component of this is really key.

COMMISSIONER BOYD: Jan?

MR. SCHORI: Now you know why I've got to come to these meetings. To keep up with Wendy and Ralph.

COMMISSIONER BOYD: To show up is to get compliments.

MR. SCHORI: Yes, compliments or --. Be prepared. Susan didn't get a chance I think to

put up her criteria chart, but I was just going to say, when I look at the criteria that I would go after in trying to figure out how to move the state forward, I would look after quick hits, and where do you get the most impact. Those would be the two I'd throw out there.

And by most impact I mean it's worth the time and effort of the state to go after it, because at the end of the day you'd get great results, even if it's tough. As a result I put utilities, and I suspect my utility compatriots around the table would agree with me, fundamentally you've got three investor-owned utilities and three public power utilities in the state. So you've got a very small group you can work with quickly to get results.

So I tend to throw anything with utilities on the quick hit list, just because, in terms of addressing an issue you can almost get people into a room and debate it, and I'd be going after quick hits on both the energy supply side of the equation as well as the demand side management. And I'm just talking process and structure about how you'd go after it.

So with that, first let me endorse a

number of things that Ralph said, which will not surprise him. I also support the idea that we should include out of state emissions, because I think otherwise you end up with this bizarre scenario where you're actually indirectly encouraging utilities to go buy all of their power out of state so that they look good, and I don't think we want to do that.

And actually I think there's a lot of fear in neighboring states like Nevada and Arizona and Utah, that that might be exactly what California might have in mind, and they might end up as the energy farms for California as the energy sinks. So I don't think that would be a good policy.

COMMISSIONER BOYD: Unfortunately there are states with coal, on the other end of the scale, who are really encouraging --

MR. SCHORI: Well, it's a mixed bag out there. It's a mixed bag out there. I also wanted to mention that public power did come out, despite the lateness of the proposal, to support the concept of the solar initiative that the Governor was proposing.

The one comment that I would make, just

for this group, is that while public power was fully prepared to be included in that new mandate -- if I dare characterize it that way -- there was a desire to have some flexibility, recognizing that well, in Sacramento I have a lot of load growth in new subdivisions and lots of new homes to deal with. Little places like Azusa are, basically, not growing, if I can put that tactfully. And they wanted a little more flexibility to put in solar, as made sense for their communities.

On the public goods charge, I think all of you are familiar with that mandate, or that set-aside, it applies to public power and to the investor-owned utilities.

On the Renewable Portfolio Standard, first I'll start with the customers in the state, 75 percent of the electric customers in the state are investor-owned utility customers. Public power is serving about 25 percent.

I didn't bring my official CMUA chart with me, I should have. You almost have to go out of the 30, 31 utilities utility by utility and look at them. Many if not most of them do have RPS standards. SMUD has one, we adopted it before

the state mandate, with the goal of getting there by 2011. So we're at the earlier date.

Los Angeles has been the controversial one, but I understand L.A. did just adopt an RPS, I don't know how it matches up with what the state is doing for the IOU's, but that's certainly worthy of investigation.

There is one very controversial issue I recognize, and maybe this is resolved at the state level, but at the municipal level, particularly when you're in a place like Palo Alto, which is getting most of its power from hydro, that remains an issue, but hydro right now does not count, even though it is an emission-free source of power, recognizing there are other issues.

COMMISSIONER BOYD: Large hydro doesn't count.

MR. SCHORI: Yes, and I will say the state has cut this and said large hydro doesn't count, small hydro does. But I just offer that up as an anomaly on how we count these things in terms of moving forward with both. But, at any rate, those are my comments. Thank you.

COMMISSIONER BOYD: Thank you, Jane. Robert?

MR. PARKHURST: Thank you, Commissioner. I'd like to build on two people's comments, on both Howard's and Jan's, about looking for the most impact on what we can do. We've talked about a lot of different programs that have been implemented, but if we look at Susan's sixth slide, on CO2 emissions, we still have an upward trend.

And so the question that I really have on this is, if we have many of these programs implemented, such as what Ben had described with the recent CARB rulings, or CARB regulations, is what does that trend do? What is the change in our emissions and our portfolio, and where can we make the bigger changes? Where can we track it further down, or where is there the opportunity because of growth of both population and energy use? Will that start tracking up?

So I think that's one of the biggest things we have to know to be able to identify those items that have the most impact, or the biggest bang for the buck.

COMMISSIONER BOYD: Thank you, Robert. These are all excellent comments. I don't want to protract this too long, because we're into our

next agenda item. but, as the second Commissioner on this year's Integrated Energy Policy Report, and as the lead Commissioner last time around, all these discussions about public power are very welcome.

Because I've just come off of almost two weeks of public hearings on that report, and we're really having a tough time in the public power arena. Of course, public power is local government, local government is always fearful of Big Brother state swallowing them or regulating them or something.

But we are trying to reach out and say, you know, we need you as a partner in all of these efforts, because you are 25 percent of the issue. And I appreciate the recognition around this table of the issues associated with that, and hopefully this partnership can deliver that message a little bit more.

There are utilities that are extremely aggressive, and there are others that are extremely defensive. The largest one in the state seems to be turning its battleship just recently from incredibly defensive to a little more cooperative, although the day before yesterday we

had a hearing where they testified where I hadn't been as angry as I'd been there in quite a long time. But that's a different situation.

In any event, these are all excellent points, and we need to take them into account. Josh and Jan keep pointing us to the end we need to get at in the limited time we have here, so by the end of the day here we'll have to bring this all back to what we want to do in the limited time we have left.

But on that I'm going to suggest we move to the next agenda item, which is a working lunch. And what I would like to ask is that the members of the advisory committee go to the back of the room and grab some lunch and come back to the table and then we will invite Dr. Hanneman to address us.

And I guess, Robert, you don't have enough food to feed everybody, but maybe you do. That's why I ask that the advisory committee get their lunches, and I guess if there are leftovers they can pick on them. Well, in that lunch break we'll take a break, it'll be five minutes plus to get our lunches and reassemble. Susan, did you want to make any concluding remarks, or any other

housekeeping --?

MS. BROWN: No, just briefly, I really do appreciate the kind of feedback we're getting. This is exactly what we need, and I think that these discussions have been very helpful to staff, and I do have a number of ideas on how we can proceed, but let's wait until the end of the day and bring it all back.

It does appear we can probably agree on some things that we can support. I've heard no objections to things like additional funding for energy efficiency, and even the Renewable Portfolio Standard. So we may want to think about that at the end of the day. And with that, I don't think I'll add any more at this time.

COMMISSIONER BOYD: Okay. We'll take a break now. I'm trying to be a hard taskmaster on the agenda, we're a little bit behind, we started a little late. The flip side is it's really enjoyable to have these kinds of discussions, it's hard to cut them short.

(Off the record.)

COMMISSIONER BOYD: Back on the record. I'd like to take this opportunity to introduce our luncheon speaker. And it gives me great pleasure

to introduce Dr. Michael Hanneman.

As I told the audience earlier this morning, it's been my pleasure to have met you earlier this year, and spent quite a bit of time with you, both through the work of the scientific community as well as through the work of the Energy Commissions Virtual Research Center, etc., etc. And we find ourselves in the same climate change audiences.

So I am extremely pleased that he's here to tell us about the recent report that I referenced. We also have two of the other authors of that report in the audience, Dr. Ed Maurer of Santa Clara University, Ed, thank you. And Dr. Larry Dale, Lawrence Berkeley Lab, a place that my agency is very familiar with. So thank you all for being here.

Michael, other than being a distinguished professor at the University of California, I'll let you, since I don't have your resume in front of me, I'll let you introduce yourself and make your presentation. Thank you.

MR. HANNEMAN: Thank you, I'm delighted to be here and to be able to talk to you about the paper that appeared in August at the proceedings

of the National Academy of Sciences. I hope I don't give you indigestion.

COMMISSIONER BOYD: I hope our chewing doesn't get in the way of --.

MR. HANNEMAN: This is a paper by a broad group of scientists, different institutions, and in different disciplines. I'm an economist, my field is environmental economics and policy. Ed Maurer is a hydrologist, Larry Dale is also an economist, both of us work on water, Larry and I work on water economics.

As Jim said, I direct one of the two centers that the California Energy Commission set up last year on climate change in California. There's a center at Scripps headed by my colleague, Dan Cayan, which is focused mainly on climate modeling, and the center at Berkeley, which I direct, is focused on policy analysis and economic analysis, including designing policies for California to reduce greenhouse gas emissions and deal with the consequences.

From my perspective there are two important features of this study. One is that we are in the position of using brand new climate model results, which have just become available to

the global modeling community.

As you know, the IPCC is beginning what will be its fourth assessment. The report will come out, I guess, about 2005 or 2006. The global climate models that it will use have to be delivered by the end of this calendar year, and we were able to get two of the models around this time last year that have just come off the press as it were.

So we're in the position of being among the first people who have seen the results of these models, which will be widely used by the international climate community for the next four years or so.

The second thing that's distinctive is that, in this analysis, instead of looking at a single emission scenario, we compare two different emission scenarios, which were chosen to contrast two different policy paths. So you see here the IS92A was the benchmark emission scenario that was used in the previous IPCC report to look at different models.

These scenarios, and their weird names, as yo may know, come from an IPCC report, which is almost a book of 90 or so different emission

scenarios. The emission scenarios are assumptions about world development -- population growth, economic growth in different countries, technical change.

The two scenarios that we're looking at, the high one is essentially a business as usual scenario, which assumes a world economy oriented around fossil fuels, carbon based economy. There is technical change, there's improvement in fuel efficiency, but nevertheless the world is oriented around a carbon-based economy.

B1, the alternative, is a very different scenario in which there is a concerted broad effort in many countries to reduce greenhouse gas emissions, to switch from a carbon economy to one that's more diversified in terms of its fuel portfolio.

As you can see, it still takes two or three decades before there's a downturn, an actual reduction in carbon emissions, essentially around the middle of the century.

So the point of this analysis is to take predictions of two models, the U.S. model PCM out of NCAR (sp) in Boulder, and the UK model, the Hadley model, and to compare the two, the high and

low emission scenario. And to downscale the model predictions to California; that is, to translate the sort of large grid model predictions to a much more detailed grid in California, using statistical downscaling techniques, and Ed was involved in some of that downscaling.

Now, the models present, both new models show strikingly different results than the previous models. In fact, I'd say the two previous rounds of models. Particularly with regard to temperature. And this is meant to summarize it.

The upper diagram shows average temperatures in California in the three winter months. In the tables, the red is high, not low, and degree is high not low. But qualitatively there's a couple of points to take home from this.

First, the trajectories stay interwoven until around the middle of the century. That is, regardless of emissions, for a period of about 30 or 40 years the temperature is about the same, and it's only after around the middle of the century that the trajectories separate out and you see a difference between the low emission scenario and the high emission scenario.

And mostly this is reflecting the fact that there's a series of lags built into the global climate system, such that even if there was a sharp reduction in emissions today and carrying forward, the climate over the next three or four decades is determined by past emissions up to this point in time. And the only difference will show up essentially three or four decades out.

The other side of that coin is, if four decades from now the global community wanted to ameliorate climate conditions, then too there would be a lag of three or four decades before any action it took then would have an effect.

There's a series of lags. The ocean has a much longer lag, the temperature, but the point is we're stuck with significant lags.

A couple of other points. With regard to winter there's an arrow showing the sort of range of temperatures predicted by these two models with the mid-range emission scenario that I referred to a moment ago.

And these two models now have slightly higher temperatures for winter than the previous models, but it's basically similar. The big change is summer. Both of these models show

strikingly hotter summers than the previous models do. And that's a feature, as I understand it, of a whole raft of refinements that have been built into the models since the last time they were sort of published, over the last four or five years.

And one of the refinements which we think is the reason for this, one of the refinements was to improve the modeling of the link between ground surface and air temperature -- sorry, ground temperature and air temperature.

And in the summer that's a more significant factor than the winter, and that explains the greater increase in temperature in summer than in winter compared to previous models which showed about the same order of magnitude.

This next diagram translates this. The same results, so you can see more specifically. On the left you see that, essentially, 25 years from now, 30 years from now, there is no difference between the emission scenarios. There's a range reflecting the two different models, and just to point out, the PCM model is considered a low climate sensitivity model. The UK model is considered a medium sensitivity model.

That is to say the PCM model is,

functions in such a way that a given change in climate conditions globally has a fairly small effect on climate location. The Hadley model, the UK model, given effect on climate change, has a larger effect, it's considered a medium not a high sensitivity model.

Going back, in the 2030's there's no difference between the two sets of emissions. They begin to separate in the 2050's, and towards the end of this century you see a very substantial separation. Under the high emission scenario temperature increases in the summertime are of the magnitude of about 9 to 18 degrees Fahrenheit.

These increases are felt throughout the state. So here, on the left, you have the low emission scenarios, the low sensitivity model, the PCM, and the medium sensitivity model, the Hadley. On the right you have the two high emission scenarios.

You see that under the high emission scenarios there's sort of a bulls-eye in the central valley, where temperatures increase more sharply in the central valley, Sacramento, with the medium sensitivity model, the Hadley, you see a substantial increase in temperature, on the

order of about 12 to 18 degrees, essentially everywhere throughout the state.

These are very substantial if these occur. These would be very substantial increases in temperature, and would make living in Sacramento, but also living in Los Angeles, living in Riverside, you know, like living in Death Valley, without the convenience of the cactuses and the vegetation.

The analysis, we have taken these basic climate results and traced their consequences in several areas. One is human health in relation to heat waves, which I'm going to talk about next. A second is the effect on California's water supply. A third is the effect on grape production, chosen as an example of California agriculture. And a fourth is the effect on terrestrial vegetation in California.

It should be emphasized that this, the analyses we're presenting are very much preliminary. These are the first runs of these models. Pouring over the results, translating them to specific consequences in specific sectors and in specific parts of the state will be the work of many researchers. It certainly is a focus

of the Berkeley Center over the next two years.

So, starting with heat waves, you see a substantial difference between the low emission scenarios and the high emission scenarios in the number of heat wave days a year. In Los Angeles, you see, with the Hadley model and the high emission scenario, 100 days a year. San Francisco has 120 days a year. These are very substantial changes.

(noisy phone interruptions)

So, this comes from a regression. These are predictions of excess mortality in two different cities, the analysis has been replicated for San Francisco, Riverside, and I think Fresno.

The notion underlying this analysis is that heat is relative, in the sense that a 95 degree day, say in Los Angeles, is not as big a deal as a 95 degree day in San Francisco, because L.A. is acclimatized to temperatures like that. Buildings have air conditioning, people are used to it, people have the right clothing and so on.

And so the way this analysis works is, it takes data on excess deaths, that is day by day mortality looking at some baselines of daily mortality and identifying excess deaths in each

city, and then fitting a model which has a zero point, where there are no excess deaths for temperatures below that point, and excess deaths kick in only when the temperature goes beyond that point. That zero point is different for each city and reflects the degree of acclimatization.

And I think that generates two things, the estimates of excess deaths here, which show again the increase in deaths under the two emissions scenarios, so two points in the century. And the previous diagram which shows the number of days associated with excess death, that is the definition of heat wave days.

So the answer to your question is, the heat wave is defined relative to the degree of acclimatization that you find in each city.

(question from the audience, inaudible)

The next few slides deal with the effect on water supply, and the starting point is the effect on the snowpack in the winter of these different scenarios. Low emissions and high emissions and middle of the century, so essentially, on the left, about 2035 plus or minus eight years, on the right about 2085 plus or minus eight years.

And you see a sharp reduction, in both cases, substantially more impact on the snow pack. 40 percent lost by about 2035 under the high emission scenario, 89 percent lost under the high emission scenario towards the end of the century. These are very dramatic reductions in supply.

The snow pack is a natural reservoir. It contains almost as much water on April 1st as the major reservoirs in the state. And so, losing a significant portion of that capacity amounts to losing a significant portion of the water available to Californians, essentially after April 1st.

And the statistic to remember is, we're calculated that about 75 percent of all the water used in California is used between April 1st and September 30th.

Now that brings me to precipitation. Almost all our precipitation occurs in the winter, maybe 5 percent, or -- in the using areas essentially none during the summer months. The models have a different story with regard to precipitation than the previous iterations of those models.

First point. All model predictions of

precipitation are more variable than the model predictions of temperature. Part of the problem is that precipitation is cyclical, you have a lineal and other cycles. And the models differ in predicting exactly when a cycle would begin and exactly how long it is.

And so, if you have 15 models you have much more divergence in predictions of precipitation in any year than in predictions of temperature, and that's reflected -- you see the differences here and also the cyclical nature of the predictions.

A feature of the previous rounds of models, and beyond this divergence of opinions, was a number of models predicted an increase in precipitation in California, and for that matter elsewhere in the U.S. Some predicted no change, some predicted a reduction, but there was more of a tendency to no change or an increase.

These two models, one of them predicted an increase, the other predicted no change. The one that's predicted an increase before now predicts no change. The one that predicted no change before now predicts a slight reduction. These models are less optimistic about

precipitation than previous models.

And the one point that I want to emphasize is that some of the analysis, including the national assessment in 2001, was simple minded, in my view, about precipitation, because it ignored the issue of timing. Even if you had three times the amount of precipitation in January, unless you can store it somehow it doesn't help you.

And you can store it in various ways, but that's costly. And so the timing of precipitation tended to be overlooked in some of the previous analyses. So this is a busy schematic, but to summarize it, there's a reduction in the snow pack and that means less storage available going in to the spring or summer, April onwards. It means managing reservoirs is harder.

The tradeoff between flood control and storing water for use is tougher than it had been before. It means that there is less neutral runoff in April, May, June and July than before. We predict reductions of up to 55 percent in stream flow in this summer period under the high emission scenario.

This is bad news. This is big trouble. And let me just mention two issues that Larry and I are looking at and then I'll move on. In my view the water rights system in California is less than perfect. There are two big projects that have contracts, that's sort of been well worked out. But water rights held by irrigation districts under than the two big projects, in a number of cases, are kind of sloppy.

The joke is that the forms have the name and addressed correctly spelled, and the amount of water is left blank. You have a system that is sort of like a grey market that operates outside the view of Sacramento and the state water board. It's kind of a local system. It's functioned effectively for 100 years, you know, it works.

But if you have a change in the underlying stream flow there's no end to the squabbles and litigation that can arise about how you adjust. It's like having a bunch of squatters occupying a house. They don't have formal property rights. You know, Mark has the big bedroom, I have the little bedroom, I grumble sometimes, he brushes me off, but we get by, we live there year in and year out. And now somebody

wants to take the house from us.

Then the question is who owned what part of the house. And there is no good paper title, and there are differences of opinion and conflicts of interest. We are very much vulnerable to that.

The other area which is less than optimal is ground water, because a natural response of users particularly in the central valley will be to pump more groundwater. One of the, the analysis shows more frequent droughts, longer runs of droughts. The number of years that are classified as critical or dry rises from about 33 percent to over 50 percent in the high emission scenario towards the end of the century.

And some of the runs in the dry and critical years, you get seven, eight, nine year runs in the high emission scenario. So the potential impacts on groundwater are very serious.

Let me move quickly to the other two. Agriculture and forestry are obviously sensitive to the weather. This is a specific analysis done by my colleague Chris Field at Stanford, looking at the effect of increased temperature on wine grapes.

And, looking at the effect on grape

quality for three areas, the Napa Valley, the other coastal regions, and the central valley, and looking at, as you see right now the climate conditions in the Napa Valley are optimal but particularly with the high emissions scenario the climate conditions become too hot to be optimal, and the result is a reduction both in the quantity of grapes but more importantly in the quality of the grapes, and therefore in the economic value of the grapes in those regions.

That's one specific analysis. Both Chris and his students and I and my colleagues will be looking at other agricultural crops and looking at the effects on temperature.

This is the last main impact that I want to present to you. It shows the effect on terrestrial vegetation. And not surprisingly, the change in climate can trigger a significant rearrangement of the landscape or rather the vegetation, with more mixed evergreen forests and with more grasslands.

These changes, again, are significant in two ways. One, in terms of the ecosystems they support these are serious changes. You have to track them with growing population and

urbanization and they imply a substantial destruction of habitat. The other thing is these changes also suggest greater instances of fire.

The last couple of slides summarize the impacts, on heat-related deaths, on the snow pack, and let me end with this, which are some of the policy actions that we suggest, and they I think overlap with the ones Sue Brown talked about.

I'm an economist, and I can't resist just putting in a plug for something that's already been mentioned, which is a cap in trade, nationally ideally, but I think for California or for the western region.

I heard one of the gentlemen before lunch talking about, if you like, people's lack of moral incentive to change their ways. And that's a valid point, but in my experience it also helps if you can show people benefit in the pocketbook from making a change.

The difference between an emissions reduction target and a cap in trade, the crucial difference is you go beyond the target to create a market to create permits which can be marketed. That's the crucial thing, that's the difference. And then these permits will eventually lead to a

market, and the market will eventually set prices, and the prices create a tangible incentive to reduce emissions.

The prices will be low at first. One other lesson, I'd argue, is you need to look beyond 2020. You need to look I'd say to 2030 or 2035. The important thing for influencing people's decisions is that there can be a set of price signals extending out over the relevant decision period, covering the capital investment, then giving them some indication now of what they might gain by adopting different technologies leading to different emission levels.

As I say, the prices will be low at first, they will build up, they will accumulate, and that's fine. But that's the tangible incentive. Without the market there's no price, without the price there's no signal, without the signal I don't think you get a strong behavioral response, that's the syllogism, as simple as that.

Why don't I stop there and take your questions and comments.

COMMISSIONER BOYD: Thank you, Michael. Questions? Josh?

MR. MARGOLIS: When you look at the

consequences, where we are now, the consequences of A, B, and C. I'm asking a question that may make you squirm. But it's very simple. What do we need to do? What is the emission reduction target that we need to be focused on to forestall the scenario that we don't want to have?

And specifically can you say, the answer I'm looking for is you need to reduce your emissions by this much by this time.

MR. HANNEMAN: That's a fair question. I don't have a specific answer. But where we're headed at Berkeley is simulations and a set of analyses which would give at least a suggested answer, but that work is still underway.

You know, comparing these two scenarios, it would look like you would want to be one, the reduced emissions globally, that's not specific to California. You really don't want to get into the high emissions scenario.

One thing I should add. These two scenarios are not the highest and lowest in the 90 or so emissions scenarios put out by the IPCC. They are something like the five percentile and the 95 percentile. They're the ends but they're not the absolute lowest one could use.

It seems to me that California should be thinking of controlling its emissions sort of a prorata with something like the B1, but what the means are I can't tell you right now, maybe somebody else here might know. But we will be looking at that in the course of this years' work.

COMMISSIONER BOYD: Abby?

MS. YOUNG: Thank you. That was a fascinating presentation. And just commenting on what you just said about that B1 scenario. Those scenarios being global, I think that's very important.

Not that our task necessarily is to adopt a target, but when we think about the reductions that we are going to be advising the state to be making, we need to keep in mind that this is a global issue, and those are global lines that you are talking about.

And there is a large portion of the world where emissions are going to increase no matter how hard they try. And so when we talk about compensating for that, that may mean that the task before us is significantly greater than those lines on your chart.

MR. HANNEMAN: Let me just add one other

point, because we're talking about mitigation, and that's important. But there's also to me a strong message about adaptation, because the lags that are clearly here mean that we will face effects regardless of what actions are going to be taken.

And just to sort of put a gloss on this from a water perspective, my take on the water community in California is that it's focused -- first of all, everybody is aware of climate change, has been since Peter Glix's work 20 years ago, but the predominate feeling is that climate change will affect the California water system towards the end of the century.

And for now the focus has been on the bay/delta problem, on getting the water projects that were build 30, 40, 50 years ago to sort of work better. And obviously that's a very important concern, and I don't mean to belittle it.

But a clear message to me is that we will experience some effects of climate change on the California water system in the next 15 to 25 years. It will be small, much smaller than 50 or 70 years from now, but the temperature is rising, there's abundant evidence on the ground that we're

heading to higher temperatures than have ever been experienced in the last century in California.

The snow is melting, the snow pack is melting one to three weeks earlier now than ever before. Flowers are blooming, migrating birds are showing up. We are getting hotter, and that's going to affect the water supply.

And if you add noise on that, unusual hot spells -- they can also be unusual cool or wet -- but we are entering now a region of rising temperature, and there will be impacts on water supply within the planning horizon of facilities being built now.

And the reason I say this is the DWR and the Calfed, and looking at the various options, as I understand it, do not have a climate change scenario in the current planning, in looking at delta options. And it seems to me that's imprudent.

It seems to me the water community needs to start assuming there's going to be some measure of climate change affecting water supply, and we will be in the business of adaptation. On a modest scale at first, but it's essentially about to overtake us.

COMMISSIONER BOYD: Howard is next.

MR. GOLLAY: Thank you for your report. I was just wondering, have you had any comments from the scientific community or other scientists on what you say in the report? Have you had any reviews? I don't know how it works in the community, but I was just curious on that.

MR. HANNEMAN: Well, it's appeared in the proceedings of the National Academy of Sciences. Other, more detailed papers are being submitted to other journals for consideration. There hasn't been any more specific review that I know of and maybe Ed? Yes.

Let me say, I think the point is we just happen to be among the very first people to see the results of these models. And the models show increased temperatures in other parts of the United States also, it's not just California. And so, but the other thing to be added is there's maybe ten or 12 other models which weren't available when we started this project.

By the end of this year they'll all be available, and our colleagues will want to look at the broad set of these. We chose these models without knowing what they'd show, but they're very

well known and they were available. So essentially the process of the more extensive peer review and discussion is just beginning.

Actually -- did you have a comment?

MS. PULLING: I was just curious if you could give us your impression about the consensus of the scientific community now on climate change. I know a few years ago there were folks who were saying "well, we're not so sure dadada," it sounds like, based on what your saying, that the consensus is pretty much there. Could you describe that a little bit more?

MR. HANNEMAN: I think what you said is right. I'm not a real scientist, I'm an economist. Ed is much closer. But I've heard real scientists talk about this, and what I've heard them say is essentially there is a widespread recognition in the scientific community that the climate is changing, and it's changing as a result of human activity.

And as I mentioned, there is abundant evidence on the ground of changes. What the evidence on the ground doesn't tell us is how far these changes will go in the future and how long they will continue. For that we rely on models.

But the models have been refined and gone through two decades or more of assessment. Ed, do you, as a real scientist, capital R, capital S --?

MR. HELM: I'm not a real scientist either, I'm an engineer. I'd say that, I'd actually even say that when the third assessment report of the IPCC came out in 2001, even at that point there was really consensus.

There still is a roving band of about half a dozen or so climate skeptics that walk around and try to convince you that things are actually still in contention, but the vast majority of scientists are in complete agreement, that it's happening, and that it's due at least in large part to human releases of greenhouse gases.

MR. HANNEMAN: You know, these are models. This is the latest generation. Four or five years from now they'll be a newer generation, and it's extremely likely that it will differ in some ways, maybe large, maybe small from the present.

And so there is inevitably uncertainty. These, I showed you projections, and a colleague, Mike Dettinger, at Scripps and at USGS, has a very nice paper based on the previous round of models,

developing a probablistic analysis. So there's a probability distribution around them, and likewise there will be a well developed similar analysis around these new analyses.

COMMISSIONER BOYD: Michael, I've got three more questions for you. Ralph?

MR. CAVANAGH: To give you a chance to answer an obvious skeptical question, and the half a dozen or so skeptics that are raising this one about this report, the claim is that the climate models cannot discriminate sufficiently by geography.

The claim is that they divide the world into a grid, that the grid squares are very large, California is four grid squares. So how on earth can you be so sure about the various impacts that you are showing?

And I want to emphasize to the audience this is not my skeptical question, but I want to hear the answer.

MR. HANNEMAN: I want to hear the answer also, and Ed is the man to give you the answer.

MR. MAURER: I've never been in a debate with one of the climate skeptics, so I'm not sure exactly how to best approach this. Yes, it's true

that these models break the world up into boxes and they make approximations of terrain, of a lot of things like that. And the grid boxes tend to be big.

I'd say on the order of, let's see, the finest one is on the order of maybe two degrees, a little less than that, which would correspond to maybe 200 kilometers, from kind of averaging out.

When you look at a map of the United States of that, well, yeah, the Rocky Mountains kind of appear, the Sierra Nevadas are kind of not there. Yes, some things are being missed.

What drives climate at large scales, however, is largely the oceans, the ocean circulations, the atmospheric circulations, and these models consistently show -- especially the latest generation and the two we use -- that, given historical conditions, they can reproduce historical climate.

And given that success, we have confidence then in projecting them out into the future. So that's kind of the bottom line. And --

MR. HANNEMAN: Do you want to say a word about the down scanning you did, and --

MR. MAURER: Yes, in our four boxes over California, and there are actually about 17, but that's still not many when you look at it, and actually when you look at the maps of temperature changes, you can actually see underneath that, you can see some kind of grid underneath it if you look at the data the right way.

To actually do an analysis of an area like California that has a lot of heterogeneity, the Sierra Nevada Mountains actually have a huge influence on where the precipitation falls, it's driven by orographic influences, and that can't really be captured in the global circulation model.

Now the movement of moisture in from the oceans and the general wind directions is captured. So what we used is a statistical downscaling method, to take the large scale information and project it onto fine scale climate. What drives the finescale climate. I could go into a lot of detail about how we go about doing that.

Basically what we do is we use a technique that statistically takes the large grid boxes and gets them to reproduce historical fine

scale climate for the historical period, and then we use that same statistical technique for the future periods to project the changes onto the area.

There are references -- if you go to the PMAS paper there are citations to point to in directions if you want a lot more detail.

MR. HANNEMAN: Should I show them the picture?

MR. MAURER: The picture -- ah, yes, there we go.

MR. HANNEMAN: Actually, this is precipitation, this is temperature. So this is from the paper by some of Ed's colleagues at the University of Washington. What is the, the top shows --?

MR. MAURER: This is the Columbia River Basin. This technique was first developed in the Columbia River Basin for these same types of models, these global models, for taking six month to nine month forecasts from them and seeing if we could actually improve stream flow forecasts using that information.

And it turns out there is some skill there. Now, there are different ways to get from

the large scale down to the small scale. One is a statistical technique, and this particular one is exactly what we used here. There's also dynamical downscaling, which is when you actually take a finer scale climate model and drive that.

The problem with that is it takes several days, four or five days, to run one year of simulation. Well, we've got 140 years of simulation under four different scenarios. You're talking about years and years of simulation just to get the output. Statistical downscaling I can do on my desktop computer, and that's why it makes it much easier.

MR. HANNEMAN: The message was that it produced, in this case, as good a fit as the much more computationally intensive one, and it may actually --

MR. MAURER: If you look at the heterogeneity of the observed patterns, there's a huge variation in the Columbia River Basin, what do temperatures look like in different areas. And this is global climate formulation using statistical technique, and you can reproduce the heterogeneity as well as the --. So, it's a way to get the information to a fine scale.

COMMISSIONER BOYD: Thank you. Mike?

MR. MASTRANDREA: Thank you. I'm wondering, one of the things that I'm -- actually you touched on distributions very briefly -- but I'm wondering if your group is going to be looking at all at likelihoods of the different impacts that you are talking about.

And, for instance, you might say that you can't make any decisions between the two models that you're looking at, but for instance there's a huge range in both the climate system parameters uncertainties, and also uncertainties of human activities, on what may happen on emissions and therefore impacts.

For instance, one way we could look at this is if you institute climate policy you're moving closer and becoming more likely the lower emissions pathway, but then if we are going to be creating policies to look at how we might mitigate these impacts we may want to be preparing for what happens if the worst-case scenario happens.

Do we need to look at that, or do we need to assume that if we do climate policy we will avoid that impact. Are you guys going to be talking about that at all?

MR. HANNEMAN: That's, my center got $50,000 from the National Science Foundation to hold a couple of conferences on uncertainty in climate policy, and we hope to involve many of these researchers and others in modeling the uncertainty and looking at how it alters things.

So, it's a major research task and there's multiple approaches. We do have a single trajectory and now you need to put a spread around it, but we're very much interested in that.

The policy debate though, there's also the issue of risk aversion and insurance, because, you know, the simple comeback to skeptics is suppose you thought there was only a ten percent chance of an adverse outcome.

Well, suppose you left home one morning and you had a teenager or a small child playing with matches, and someone said "well, there's only a ten percent chance that he'd burn the house down, so you really needn't take any preventive action," you know.

And here we're talking about larger probabilities than ten percent of these outcomes, but we'll certainly get into that.

COMMISSIONER BOYD: Peggy?

MS. DUXBURY: Thank you for the very sobering presentation that you just gave us. A couple of thoughts. One is, in your water scenarios you didn't take into account what would happen in the Colorado Basin and the inputs of water I'm assuming, which will also probably be affected in terms of changing the California water scenario.

MR. HANNEMAN: Right. And colleagues at the University of Washington have been simulating the Colorado, but actually with the previous versions of these models, so they'll be looking at the new version. And yes, we want to, the Colorado is an important source of water, and so we want to connect that, and in fact this year you can see the effects on water supply concerns resulting from the drought in the Colorado.

So, we haven't translated this yet into specific reductions for specific urban or agricultural water districts. At this point we have real data on the predictive reductions in stream flow. The next step is to translate this to particular water users, particular districts.

But also to look at their other sources of supply and in fact to put together a broad

view, district by district, of the effects on the supply reliability. And that's exactly what Larry and I and our colleagues have been doing in this phase of our research.

MS. DUXBURY: And then the other comment, which is really as much for this committee for something that I've gotten out of your presentation, the slides you had up before this one had sort of the two big ticket items up there. It had the transportation sector, which accounted for almost 50 percent. And then it looks like you include in the electricity number imports as well as what's generated here in the state.

And I think for us that's a good road map of sort of the, that's 80 percent of the total emissions that we have in the state -- that's not a secret, but that puts it out there. I think another piece of information that would be valuable for us is if we could get, you know, to do that low scenario, what kind of goal would that require for us to give us some knowledge of what we're, you know, attempting to get at in terms of emission reduction.

MR. HANNEMAN: Several of my colleagues

at Berkeley are building a model of the California economy, what's called a computable general equilibrium model, with I think it's 105 sectors and ten income groups. And so we're going to be looking at both emissions from various types of manufacturing, from other sectors of the economy. Also emissions from household consumption activity, including the transportation sector.

And also there are different ways of designing cap and trade schemes, different ways of allocating permits and so on, to look at how they would affect different stakeholders in California. But, as much with an eye to then trying to design policies that would, you know, if there's harmful effects in particular groups they'd have a policy to soften the blow of that.

So the whole idea, in fact, is a detailed look at the California economy, and that's what's underway right now.

COMMISSIONER BOYD: Robert?

MR. PARKHURST: It sounds like that study would give some idea of the economic impact of this, and so I guess my question to that would be when would you have that information available, because again that is something that is very

important to many of the people around the state.

MR. HANNEMAN: When the two centers were originally conceived, I think Guido Franco (sp) and his colleagues at the Energy Commission talked about a five year period of study and developing an integrated assessment around year four, with a year for digesting it. And gee, that would have been great.

We're sort of being overtaken by events, and we're being responsive, so that we have a version of the model -- actually it's the second or third iteration of the model that's running now. I think the third version was delivered a week ago.

We would, frankly, and we want to explore this with Jim and others at the Energy Commission, we'd like to start a process of having maybe a workshop in three or four months, which would be a conversation showing results, getting feedback, getting comments, but also having discussions about different policies to simulate or different ways of tweaking things.

So the answer is I would like us to enter into a conversation with many parties including many of the groups here, you know,

starting maybe in january or sometime sooner, that will continue. Because we still need another two or three years of baking and building and putting together, but we're at the point where we're having preliminary results and want to get feedback and want to get guidance on features to add to the model. So I see that happening soon.

COMMISSIONER BOYD: Well, thank you, Michael. It's always a pleasure, and I appreciate you're sharing that report with this group. I've had the luck of having had this presentation a couple times now, and this to me -- well, I guess I'm going to call this one the blue book, because the cover is blue. I made reference to the green book earlier.

The green book is a product of 1999. It was very significant for California. So much of what we're doing now has roots back to what the message was here. The blue book is a refinement, an update, what this caused California government to do was to take a real deep look at climate change, caused the creation of the Joint Agency Climate Change Team, caused the Department of Water Resources to do a 180 degree change in their views of climate impacts on the water system, and

has put a significant focus.

You're just, well, downscaling and improving that focus for us, and we very much appreciate that.

Two comments you made. You mentioned adaptation, we haven't had much discussion about that today, but that's very key. When we created the Joint Agency Climate Change Team in 1999, the message of the green book was to affirm some of what we heard here today. It's real, there's a huge scientific consensus, it's already happening.

And California's going to have to do two things. It's going to have to deal with adaptation, and then we're going to have to start dealing with mitigation if we really believe that this is going to continue in the future. But the adaptation concept was, well, nothing's unanimous, but there's just no question in the minds of most people that something has happened.

They're still debating whether human beings are responsible or not, but it's happening. If we're going to live on this planet that we inherited in a certain state, and we only have certain tolerances, we're going to have to do some adaptation things.

And the water system is the most critical in my mind. We moved water from the end of the train of issues to the front as the result of the work that was done there. And the sea level rise is devastating to the delta, the delta is the place to which we transport all the water.

The biggest reservoir in the state, Michael said it, has been the snow pack. The early report said same amount of precipitation more or less, more rain, less snow, it's still devastating to us because the reservoir we were depending on most heavily is the snow pack. If it doesn't exist anymore, or it's diminished significantly, you're going to invest huge amounts of money in a different kind of storage system, and now they're just focusing more.

I mean, the temperature is going up and it's just exacerbating the problem. So, we haven't mentioned the Joint Agency Climate Change Team work here much, I think once I mentioned it here today.

We did share with you in the first meeting when we did the dump of materials, a large number of scenarios that group is working for, that is yet another body of knowledge or

information or even suggested strategies that we have as a reservoir to draw upon, and frankly that group is looking for any guidance it may get from this advisory body to give it direction to deal with those.

So, this is all, well, I mean, it's been together and it's coming together even more. And the Energy Commission was fortunate enough to have the financial resources to invest in all this research on a five year timeline, and as Michael said, the world has changed, events have changed, to frankly turn up the heat on us, pardon the pun, and we're moving faster.

And one of the reasons we didn't launch this advisory committee when it was authorized a couple of years ago is the time wasn't right. The time was right this year and the heat's being turned up, and we are together.

And we are wrestling with the fact that information is still coming at us. At the same time we are charged to try to produce some recommendations. It's not a perfect world, but if we're going to, you know, save the world we've got to deal with what we've got. So very much appreciate it, Michael.

MR. HANNEMAN: It's been my pleasure.

(applause)

COMMISSIONER BOYD: Okay, next on our agenda is yet another presentation, very key to what it is we're about. I somewhat introduced Ned Helm earlier, the Director of the Center for Clean Air Policy in Washington, and he's going to talk to us about what's going on in the world so to speak, and his title has some recommended policies, so we may get some specific inputs here and some lessons learned from other people.

So, Ned, while they wire you up, thank you for being here.

MR. HELM: Can you all hear me all right? Does that work?

Well, thanks, Jim, I certainly appreciate the opportunity to talk to y'all today.

COMMISSIONER BOYD: Let me ask, can you all hear Ned? No? Okay, green light.

MR. HELM: Is that all right? All right. First, a word about the center and who we are. Jim mentioned some things about us. We're an environmental think tank, founded by a bipartisan group of governors back in the mid-80's to work on emissions trading and acid rain issues.

Some parallels with today's world, where states took the lead first and the federal government had to follow. We had a similar administration that was not so interested in moving on that issue at the time.

Our work, about half of it is international. We played a major role in designing the emissions trading program that the European Commission is putting into effect January 1st, I'll be talking about that more as I go through my presentation.

We've done a lot of work with developing countries and individual countries around the world, and of course I want to work with states. Our base has always been working with states, and in the last several years we've done a lot of work with individual states on their climate plans, including most of the states in the northeast, and Wisconsin and Maryland and many other states, and we're very excited about working with you guys here in California.

We also bring together a group of delegates from around the world who participate in the Kyoto negotiations, to talk about the future directions of that treaty, and we played a

significant role in designing some of the elements that are in the Kyoto treaty, so we've got a good feel for what's going on with a number of countries around the world. I think that's what Jim wanted me to talk about.

So first I'll talk a little bit about the importance of why it's important for states to act first, and what's been going on out in the states that have already taken action, and what kind of lessons might be drawn from that for California.

And I'll talk a little bit about the European experience, and I'll try to leaven in some things about the target discussion you had this morning, in terms of what Europe has done on the targets question and how the targets relate to the measures and the activities you undertake, which I think is a very important piece of this.

And then finally some looks at what the opportunities are as we see it that are possible for California, and a sense of the kinds of analysis we plan to do, and then your advice on whether it's the right stuff to be doing for this committee and for the Commission and for the environmental agency as well.

Okay, first I thought I'd give you a little background on what's been happening globally on this issue, and many of you probably saw the story about Russia last week, President Putin directed the cabinet to go through a process, they have endorsed ratifying Kyoto. It now goes to the Dumo (sp), which is the equivalent of our parliament, our legislature.

He basically controls the votes, thanks to the recent election, so we're pretty confident that Russia will be ratifying and probably in the next couple of months. That means Kyoto probably goes into effect early next year, probably spring of next year. And that sets off a whole series of activities in a number of countries that'll really move this ball forward.

I think for the U.S., for Canada, and for companies in this state in particular, there's some pretty important implications. We're already seeing these implications on companies that are multi-national. BP of course has been a leader globally on climate, and of course a leader in Europe.

Any company that's a multi-national has seen the price signals and the beginnings of

significant trading and pressure in Europe and in those markets and I think you'll see more of that. We're seeing at the Wall Street level a lot of shareholder efforts to force companies to look at their portfolios in terms of their levels of risk, of what this will do to their portfolio of capital stock if climate goes forward.

Two major utilities, American Electric Power and Synergy, have both been forced by shareholder efforts to profile those risks, and they're pretty significant, they're having a big impact on those companies.

Synergy, for example, has set a target for themselves that's equal to the Kyoto target that they will meet by the Kyoto deadlines. Entergy in Louisiana in Texas and Arkansas set a target even tougher. So we're seeing a fair amount of action by the corporate sector, where they see this coming, and where they see it hitting.

And I think the ratification of Kyoto will send that signal even more strongly to companies in this state and across the U.S. and you'll see it more evaluated in terms of the risk profile for companies that aren't taking action or

have a heavy reliance on coal and other things that would put them at some risk of stockholder, you know, share values dropping.

In terms of what this means, Kyoto, for states specifically, without Kyoto there's probably a little more opportunity for states to buy and sell credits with the European system and with countries that are doing that. With the adoption of Kyoto it makes it a little harder. I'll talk about that a little more when I get to the European program.

But I think for most states it means there will be a certified, solid set of reductions in carbon emissions that are available for purchase. So a state like California can set up a cap and trade program, you certainly could buy from Kyoto countries, European and so on, and be certain that what you're buying is a real reduction, a ton is a ton kind of thing.

So we'll create a safety valve if you will, a place you can turn to in addition to what you're doing in your state to help meet targets if your company faces really tough costs in meeting the targets that might be set in your state.

I think Canada has a new Environmental

Minister, just came in as part of of the new Canadian government. Canada is going to be a bellwether for us. This new minister and the new administration in Canada is very committed to meeting their Kyoto target.

They've got a tougher road to hoe than the U.S. would if we were in. They have heavy reliance on coal power, a big coal base, big natural gas base, lots of exports to the U.S. They are determined, and doing some really aggressive things to move forward on that, and I think that will send some signals and some examples for our coal states.

You know, we have our progressive states like California and New York and Massachusetts that are out there in front moving, and we've got the laggards like Wyoming and West Virginia. I think Canada's action will give us some signals for what might be possible in those states as well.

Other recent developments, and I'll talk about New York in more detail, but RGGI stands for the Regional Greenhouse Gas Effort, headed by Governor Pataki of New York. It's the six New England states plus New York, New Jersey and

Delaware. Some other states, Pennsylvania and Maryland, are observers.

This is on a fast track. Those states are trying to come together on a cap on utilities at least, maybe on some other sectors as well, a cap and trade program. The principles will meet in December of this year to set the targets for the states, and in April they're supposed to decide what those targets will look like. So fairly aggressive effort there.

In terms of other states, you can see my list here, we're working with most of those states. They've moved along pretty aggressively in terms of setting up plans, setting up targets, of finding specific measures and moving them through their legislatures, so some very good action going forward in a number of states.

I add just one point on Brazil, because I know you all are doing things on the carmakers, very neat stuff. Brazil recently got agreement from the carmakers in Brazil to produce vehicles that will be able to be flexible with the fuel they can burn, 100 percent ethanol down to 25 percent mix ethanol and gasoline.

All the major producers are all lined up

now to get on board on this. Pretty amazing for one country such as Brazil to push that forward.

Okay, why states? A lot of times I speak on this and audiences say "come on, this is an international problem, what do you mean states should do something. What, are you kidding here? This is a big global problem."

The answer is the U.S. states have always been the laboratories of democracy. States have always been the ones that pass the environmental laws first. If you look back to 1970, California of course the leading example of any state, but we've got New York and Massachusetts and Wisconsin and some others, every major federal legislative effort on the environment in any sector has been preceded by tough action by selected progressive states.

That's the way our American system works, and that's why we call it the laboratory of democracy. So there's a good argument there. Then there's another argument, and that's look at the numbers.

And this gives you a feel, this is first looking at CO2 emissions. This is global emissions, and if you treated states as if they

were countries, Texas is the sixth largest emitter of CO2 in the world, and you see California is 13th, followed by Ohio, Pennsylvania and so on.

Now the nicer news for California is, if we look at it in per capita terms, which is what the rest of the world often talks about, then we see Texas is the highest per capita in CO2 emissions, Ohio second, Pennsylvania, Michigan and Wisconsin, all the way up there. The only country in that mix is Australia and then Canada, who are both heavily coal-dependent.

And you'll see California is second in the aggregate, you drop way down to 20th or something like that in terms of per capita. You're lower than New York, lower than New England, and that's because of the great programs you've got in energy efficiency and buildings and so on. So, a very interesting way of looking at this, and this is the kind of thing the Europeans pay a lot of attention to.

Okay, big picture on what's happened in states. Twenty-eight states have plans. Now, having said that, a lot of them just sit on a shelf gathering dust, but there are probably eight of those that are very significant and far

reaching and moving on their way. And I'll talk about some of those things now.

In terms of the specifics of what's in these state plans, Susan had a couple more states than I did on the renewable portfolio standard, i think she said 15, I think there were a few this year that were added. You can see, again, California on the forefront, New York and Texas are important.

New York's looks a little better than it is. I heard the discussion earlier about do you count hydro or don't you? New York's, if you take out Niagara Falls, it's really only ten percent of goal, so it's really not quite as impressive, but it packages well, 24 percent, but it's not quite as impressive as some of the other states.

You can see public benefits charge funds. A number of states have those, where they put a tax on electric wires. Other things in electricity, we have several states that have done cap and trade already. New Hampshire was the first, it had a cap of CO2 emissions at 1990 levels.

Massachusetts has a cap on their six big coal plants, New Jersey has a binding agreement

with their major utilities. And I mentioned to you the effort by RGGI, their regional greenhouse gas effort, across all of those New England and eastern states. So a lot of good things happening there.

On transportation, the focus has been principally on can you re-allocate the money? Can you move the money on transportation away from highways and high emitting alternatives towards things that are more climate friendly, you know, transit oriented, pedestrian oriented, that sort of thing.

Best examples here are New York, New Jersey, and Maryland. In each case the states have really taken a hard look at where their money is going and really trying to estimate what their impacts are. In New York I think it's the first state to require all their metropolitan planning organizations to do an assessment of every infrastructure investment in terms of what its impact is on greenhouse gases.

So any highway, any transit link, any bridge has to be estimated just like you would with an EIS. What's the greenhouse gas impact, and are there alternatives that would be less

adverse from a greenhouse gas perspective. We're seeing this in Massachusetts, it's beginning to do the same thing. A good direction, to sort of send signals to the local level that are making the transit and highway decisions.

On technology -- I don't have to tell you about the California system. The only thing I'd add here is you take the six states that have adopted California standards and Hadley has spawned two more in this year alone, Connecticut and New Jersey, both passed a law this year as a result of seeing Hadley passed here in California.

Add them to Canada, which has a commitment for a 25 percent reduction from vehicles, and you've got nearly 30 percent of the North American market will be covered by a Hadley type standard, assuming we're successful and the others are successful in court and so on. So we're beginning to have a real significant bite out of that car market and the ability to really send some signals to the auto companies.

A little bit about process. I followed the discussion this morning about process. We've worked extensively in states, sometimes as the facilitator of a stakeholder process, like you're

doing here, sometimes as the analyst, and so on. So we've had a chance to see different models of how this works.

I think what I'll point to is really the one that I think is the best model, Connecticut, which just finished its process in January. In their case they had a stakeholder process, much like the people around your table here. It was aimed at consensus rather than simply recommendations, and it was designed to feed into a cabinet committee.

It was a very public process, just like you have here, people were in the audience, there was a chance for the audience to speak up. Any group that wanted to see any of the documents on the web, just like your all doing here, a lot of feedback.

The basic idea here was the state wanted to build a base of support, and a broad base, for whatever they were going to do. And it worked very well. In fact, the cabinet, most of the recommendations from Connecticut were consensus, everybody on the committee unanimous consensus, went to this cabinet group, cabinet group adopted it, went right to the Governor and the

Legislature.

Fortunately they'd gone through this process, because the Governor, as many of you who follow politics, he was almost impeached, he finally had to resign under a cloud over some fraud accusations. But the good news is most of what they had developed had a broad political base, so it went through the legislature and was able to survive. So I think as an example of process, Connecticut had really an ideal process.

I'd also note that it's very important, because they looked not just at the short run. I know a lot of the discussion this morning was about that. It's not just about what's the target in 2010, it's really about what's the target in 2050, and where are we trying to go.

So when they did the analysis, the economic analyses, they were looking at not just what stuff is available today, but what kinds of technological innovation could be done, what could we plan for in the short and medium term and what do we know we'll have to do as a stretch goal.

So Connecticut's program, basically, the target they've got, they can only show ability to get to 70 percent of their target, and it's the

same as the New England target, ten percent below by 2020. But they set it up in such a way that they staged the things and they recognized that they had to push technology.

I think that's really important, from the presentation just before me, you see what a long-term problem this is. We don't have all the bullets yet. We've got technologies -- I think one of your folks on the panel said something about that this morning -- there's a need to really look not just at what's available today but what's out there in the future, and how do we push those technologies, how do you send the price signals so that industry has the incentive to go ahead and make that capital stock turnover.

Okay, a quick mention on the subcommittees. They used a subcommittee process, so did New York. New York did it on working groups, you can see the fourth bullet down, and by sectoral area. They did it, as Josh suggested, everybody who was interested could be on a given subcommittee, it wasn't an exclusive process it was an inclusive process.

And in the case of Connecticut the measures were driven by the subcommittee members

rather than by us. We did the analysis, but we didn't push oh, you should look at this one you should d look at that one, we made some suggestions, but it was very good because there was a lot more ownership in terms or process.

Now remember, Connecticut had a long, a full year and a half to do this, a little more time than what's available to you at this point.

In terms of the analytic piece, the first step was of course to build that business as usual baseline. What were the emissions going to look like in New York over time. Then we went to work on the target, and we looked at the target both from a bottom up way, in other words, take all the sectors, figure out what you think you can do with today's technologies and opportunities, what's that add up to? How close can we get to a given target?

And we looked at it from a top down, what have others said about where we are and where we need to go, what is the global goal, what is the need globally, where do we have to get from the presentation we just had at lunch, obviously we need very significant reductions.

So we've got a lot on our decision about

targets, by looking at both where we have to go and what's possible. It's not just a question of what's possible, it's also a question of where do we have to go and what signals do we want to send.

And then of course we used both the bottom up technique, where we looked at individual sectors, and I think, in looking at the California data, industry for example looks like a promising sector, not very good data out there. So there's a real need. And we found that in a number of these cases.

Freight, huge opportunity in the Northeast, yet again, lousy data. We're generating some pretty good data now, but again real opportunity, you've got to be careful that you don't just pick the ones where you have good data and ignore the others because you're not sure. There's real opportunity out here.

I gave an example in the CEM program, which is the opportunity for developing countries to develop projects that reduce CO2, and sell those credits to the countries with targets. In the process of CEM we found new programs in the HFC/CFC area where India and Korea are going to clean up these HFC and CFC plants that produce

them. Huge reductions at very low cost. Something that nobody ever thought of, nobody knew was out there.

But because we had a trading system and a way to send signals to people, you innovate, you find something exciting here and you can make some money and you can do some good with some real opportunities. So i think that's a real important piece to remember in thinking this through.

Okay, some quick words about New York and what they did. The upper line, the highest line is the base case, where business as usual was. And then you see the second line just below that, are things that New York already had underway that would reduce from the business as usual. And then the other three are low, medium and high scenarios of reduction. And if you want, I've got the details, if you're interested, it's on our website.

It lays out sort of what the assumptions were about a low, medium and high. Basically the low cases were things that were almost free, very low cost, things you should be doing any way kind of, no regrets kinds of things. Medium was a little bit higher cost.

High, sometimes it's high cost, sometimes it's high political difficulty, where you might face for example a gasoline tax in New York, makes a lot of sense, a total non-starter. It was unanimous, everybody in the state, all the groups were against us, except one or two, my environmental colleagues, but otherwise it was a no starter. So that's part of what you need to factor in, maybe the kind of criteria that Susan was talking about earlier.

Here's what New York decided to do. Again, the target they set is the line at the bottom, the 56.97 -- this is carbon, tons of carbon. There's the target they set, you can see where we got with the measures we built bottom up. We're only about halfway there. So New York set a target, we've got a long way to go, and it was hard for the group and hard for the Governor to really bite the bullet and say we'll go the whole way.

And as I said earlier, you can't do it all in one bit, you've got to really think about it and plan ahead, but that's something to be focused on as you go forward.

What came out of New York? We talked

about the target, I talked about the RPS, they did adopt the California tailpipe standards, and they adopted a recommendation for feebates if Hadley were to fail, to be shot down in the courts. Tax credits, I talked about RGGI.

On the transport side, I mentioned the investments and the opportunity to try and move the money and push smarter growth harder. They also had a big effort on biodiesel, they set a goal of 50 percent of the diesel sold in the state of New York in 2020 should be 20 percent by biodiesel. So, a pretty aggressive goal.

Our analysis showed that the land area in New York, you could only grow enough soybeans by that time to meet about a sixth of this goal, the rest would have to be imported biodiesel. So one of the key issues here is some of these things sound great, but you gotta really think. In California you've got a lot more land than New York, but you've got to think about what the full set of resource implications are of going to this.

The final bullet, and I think a very important one, mandatory reporting from all sectors. Again, when I look at the California picture, great numbers on utilities, not so great

numbers on some other sectors. This is really a bottom line. You can't set policy if you don't know what's going on in terms of the emissions.

So, a starting point, I know the Registry is a good program, I think it's one of the first, but I think you need to complement that with mandatory reporting across the board to see what's going on in terms of emissions.

Lessons from the states. I think the regional things are a good idea, but I think the bottom line is it comes back to what does each state do. We're not talking about interstate compacts, those would have to go to Congress to be approved, not likely in Congress.

So really, the RGGI gets an agreement on what that cap is for each state, and then each state has to go back and pass that cap and trade program in their state and link it to the other states. Quite doable, but I think the bottom line here for state action is the state itself is the key point.

Cap and trade. I was asked to give a little reaction to the Oregon and Washington programs compared to the New York-New Hampshire-Massachusetts. My view is that Oregon and

Washington, where you simply have an offset for new sources, and in Oregon's case I think it's only 17 percent of the emissions have to be offset, it's a poor second choice.

It's not bad if you have nothing on the books, but it's nothing like a real cap and trade, because it sends no pricing to existing sources, and it does not push the capital stock turnover. All it does is say new guys have to do this. It's okay, it's a nice signal, but it's not the same as a real program that gets real reductions. So, I have a strong view on that.

Otherwise I think caps work very well with the renewable portfolio standards and with system benefit charge kinds of programs. In New York the target they eventually agreed to was only slightly tougher than what our modeling showed that you get with the RPS and with the system benefit charge.

We had laid out some other options for them that would have tougher caps, but the political will was such that it seemed difficult to do, but I think, know that when you've got that RPS and the public benefit you want to do an analysis, what's that get you first, and then say

all right, how much further can I go with a cap and where do I get it.

And finally, we found in many of the states we worked in, freight options are -- I think Jason said something about this this morning -- freight options are really promising. And again, because there's not much data, people haven't focused on the ports, it hasn't been a target. But I think it's a huge opportunity for any state.

And my first look at California, and again not being into the details of California's numbers, looks promising. You've got some very big ports. We're doing some work in New Jersey and New York, following on the work we did here, working with the ports where they're modernizing. And changes in the cranes and the equipment on the ground can have huge implications. You go to electricity from diesel, big local benefits in terms of air pollution as well as significant CO2 benefits.

And then industry. Again, we haven't looked much at industrial boilers in many of the states. They tend to get bypassed, even on conventional pollutants. SO2 and NOX, we still

don't regulate them in most coal-fired industrial boilers around the country.

Huge opportunity, in California you don't have coal-fired boilers except for the cement industry, but again a place to look, a place that has real possibilities in many states.

Let me turn to Europe quickly, I'm not sure how we're doing on time, I don't want to run too long here. The European program is really a comprehensive program. It includes a cap and trade system for electricity and for the six major industrial systems. And then it requires each country to come up with other policies and measures for all of the other sectors in the country.

So they need an integrated strategy that says we'll get this much from the cap and trade program and we'll get this much from transportation, and we'll get this much from commercial and other sources. So it's an integrated program where the country has to meet that overall target. So their choice about what they do in cap and trade affects what they've got to do in cap and trade and other sectors.

And you'll see in a minute some of the

difficulties they faced in laying out the program. In terms of the trading, it begins in January. Their target is set, 10,000 installations across Europe are covered, so this will be the largest trading program of any emissions of any sort in the world, covers all those sectors. Twenty five different countries, each with their own baseline and data questions.

They've got a three year warmup phase, from 2005 to 2007, and then the full scale phase beginning in 2008 with Kyoto. And this is a quick little slide to show you the different pieces. Here are the four sectors, you can see the overall target is set for the country, and then its got the four areas it can set individual targets for, and the trading sector is just one of those. And then you've got these other sectors within there.

So the country has to come back with a plan. It says "we're going to get 50 percent of the reductions from trading, and then we'll get the rest from transportation and these areas." So you've got to lay that out. I think it's a good way of thinking about it.

Here's a slide showing you the breakdown. The dark blue is the amount of

emissions in Europe covered by the trading sector, the lighter color is for those that are not covered. So you can see, not quite half is in the trading program.

Now what's the pattern been so far. Well, the way this is set up, each country could decide how many tons to give to the people in the trading sectors, and then make up the rest in the other sectors. And this is a little bit like our old ozone program years ago in the states, you know, where the Governor had to decide. He had certain federal measures and then he had to decide how much to make the bakerys do, how much to make the dry cleaners do, how much to make the steel mill do, etc.

And in the early years, with the exception of California and a few other states the Governor usually gave all those people passes. "Oh, don't worry, transportation will take care of it."

Well, unfortunately, the bad news on the European program is that a number of the countries have done the same thing here. They were given the flexibility to set the targets as high as they like. In many of the countries they've set the

targets very generous to the people in the trading sector and said we'll make it up in the transportation. And we all know how that's been over the years.

So I'm a little concerned about how that's going to go, but of course we're in the pilot phase. We'll see what happens with the pilot phase, and we'll maybe have a chance to move it perhaps a little tougher later.

The system is an allocation system, they give away 90 percent of the allowances for free. They can auction up to 10 percent, most countries are giving away all of them. And there's a mid period review in 2006 to see how it's going.

Other things the Europeans are doing -- I might add a point here, you were asking me about targets. In addition to these targets, which are within the Kyoto Protocol, so they're within the 8 percent reduction level, several European countries have looked and said what do we need in 2050? What's this program going to look like as an overall program.

And what we found is, UK, 60 percent reduction by 2050. France, 50 percent. Germany, something like 70 percent. So they've set those

targets, those are not binding at this point, but they're going to sort of send that pricing signal, sort of send a message to people that this is where we need to go, we think about this problem in a broader context.

These are some examples of some specific programs beyond the cap and trade they've used. I think one of the most interesting is this road pricing in London, very controversial, the mayor of London did this on his own. He basically set an $8 a day charge for any car that entered the central city, and they use this easy pass like you do on the tolls here, so it's very easy to monitor who's going in and who isn't and who pays.

At first people thought he was crazy, that it would never work. But now it's been a wild success and people are very supportive. The highest increase in mass transit of any EMT attempted program around the world, a big reduction in congestion, a big improvement in speed -- in other words there hasn't been as much traffic jams because people really do choose.

Now, this is tough to do, the mayor, he doesn't have to face election, so he was willing to take this on. But he's actually going to

expand it, because there's real support now, people seem to think it's a real exciting program.

Another example of a program that I think will be interesting. In Germany they have set a subsidy tariff, a feed-in tariff for renewables. They've offered 15 cent a kilowatt hour incentive to anybody that will build wind. And they've built 12,000 megawatts of wind in the last two years, more than we have in the entire United States, in two years.

And you say, well, that's a very high price, 15 cents, of course their electricity is 15 cents. But still a significant price. What they've done is they've rolled that price across all ratepayers, so the net effect is under two percent rate increase, and huge impact.

Now I'm not saying that's the answer, but it's interesting what you can do with dramatic measures to try to move technology.

All right, current state of play. I told you a little bit about the nature of the NAPs, the National Allocation Plans. I think we're optimistic that Europe will meet their targets, they will have a little bit of a bump, you know, these targets aren't as tight as people

might like to start with in the trading system. So that will probably mean there won't be as much trading as we might see otherwise.

They are very open though to linking to other countries and other systems, and this is a place where the RGGI folks in the northeast have been very interested, and hoping that RGGI's eight state trading program could link to the European program.

It looks like, since Kyoto is likely to go into effect, that RGGI probably can only buy from Europe at this point, but I think it's an open question, you know. If there's a Kerry administration and the Europeans are trying to cultivate America, maybe they'd recognize a California program, and say we think this is equivalent with ours and we will trade with California.

Because I think the rules in Europe basically say if the country or the state has a comparable level of stringency, in terms of environment, and you look at your programs and what you're doing with Hadley, what you've done with RPS, the kinds of things you're doing with efficiency, your per capita levels are certainly

comparable with Europe, and with the kinds of things you're talking about doing here to move that target further I think there's a good case to be made that a California climate program could be recognized by Europe and be involved in that trading thing, which would give a safety valve, again another place to turn for companies that say well, I'm looking at much higher cost, there's no place to buy these credits, what am I going to do.

Well, this would be a real market with certified credits you could buy from. So pretty promising as an opportunity.

So I think there's a path here for California that will link you to the rest of the world if you're able to put together a tough program.

Some differences. I've talked about both Europe and the state work. The basic difference is that you and Canada have a cap, country-wide cap, it's binding, it's mandatory, there's no getting around it. You basically have to do it, and whatever reductions you do from one place, you know, you've got to make the reductions add up.

Whereas in our state programs, while we have targets, we have no binding targets. We have some binding caps on the utility sector, we have some things like the Hadley bill, some measures that are by themselves binding, but a combination that leads to a target that's binding, we don't have that yet. So that's really the difference when we look at the European and the Kyoto programs and what's going on here in the states.

Okay, potential areas for California leadership, and these are much like the kinds of things that Susan talked about this morning. I think first, it would certainly be an opportunity for multi sector cap and trade. Looking at industry, like take the six major industrial sectors and utilities.

I think it would be more interesting here given how relatively clean the utilities are, with the exception of this public power issue. It sounds like this would be a more interesting cap and trade, and you'd be breaking some new ground and some promising ground, to expand to look at the major industrial sectors, including oil refining, steel, and cement and so on.

In terms of allocation, there are a

number of ways that you can do it. Josh was alluding to doing it economy-wide. You can certainly do that, or you could do it over a certain number of sectors.

And I think there's also a way in which this could be combined with the kinds of things we talked about, the agricultural sector and some of the other sectors, it wouldn't be in the cap and trade. You could set up a system where certified baselines are set for those people in the other sectors, and those bona fide credits could be sold into the market.

There's even ways to set it up so that you could have those sectors carry a little of the burden, so that, maybe a given project in ag reduces 100 tons, maybe you say, well, 25 tons is given to the atmosphere in California, and 75 is salable into the market.

So there are ways of sort of splitting the difference, so that sectors playing that aren't in the trading system still get some economic reward for doing it, but also contribute a little bit to the achievement of the target.

So there's plenty of ways to fine-tune and as we say "turn the dials" on a trading system

to make this work for multiple sectors.

In terms of transportation, smart growth we've talked about and you guys have done a lot there. Good opportunity and obviously I mentioned port and freight as a good opportunity that's worth looking into some more.

Some opportunities for HFC's and CFC's. I know that was a small part of your original inventory but it looks like it's growing pretty fast, so it looks like it can be a pretty important opportunity.

I mentioned mandatory reporting, we didn't talk much about sinks, but again, looking at sinks as a whole in terms of the state as a whole, as we're trying to do with some of the developing countries, could be an interesting alternative to add to this package.

And finally, the oil production, extraction, natural gas system leaks. We did some studies in the U.S. showing that there's some real opportunities in compressor stations to make reductions in terms of methane escapes. Pretty promising. And some things in agricultural, like with biodigesters, could be very interesting. So, lots of things to look at there.

A quick look at how you compare to other states, to give you a sense. And this is looking at raw emissions, and you see, it's basically California, New York and Connecticut, to show you the three states we've worked with the most. And obviously in aggregate terms you're much bigger in transportation, just the same as new York in electricity, and smaller in buildings, which fits with the pattern.

But again, if we look at it per capita, you're not so good on per capita in transportation, very good in the other sectors. So, not too surprising, but it kind of gives you a feel for where there might be some more opportunity for more heavy lifting or not heavy lifting.

Finally, some thoughts about the analysis, and again this matches with what Susan had laid out for you. We begin with the baseline and looking at the various sectors on the transportation side, looking at alternative fuels. There look to be some promising things there. And of course jet fuel and so on.

Inter-sector trading. Our thought would be to use the NEMS model and build in industrial

sector as well. I'd be interested in talking some more with Dr. Hanneman and his team to see if the new model you're building here would lend itself well to this analysis. I gather it's a CG model, but still might have some useful applications to doing this sort of analysis.

And we could look at various different combinations of caps and measures and so forth. And then in terms of other measures, opportunities in the cement industry, oil refining, natural gas, biodigest, etc., etc.

So that kind of gives you a quick thumbnail. Be glad to take any questions. Thank you.

COMMISSIONER BOYD: Josh?

MR. MARGOLIS: Thank you very much, that was an excellent presentation. Nice to see you again, too. A point -- and I ask you this because of your vast experience in setting up regional programs and advising national programs -- does it, from the standpoint of the policy makers, does it matter where the greenhouse gas reduction comes from, in terms of its effect?

Geographically speaking, does it matter

if it's in Fresno or San Francisco, in Houston or in London or in San Bernardino?

MR. HELM: Not at all. That's the beauty of this. if you like trading this is a program where you can have California and New York and you're not worried about hotspots, because there are no hotspot issues. So a reduction in Prague is the same as a reduction in Fresno. That's why this is the quintessential pollutant for trading.

MR. MARGOLIS: So we can get a benefit from an action that occurs on the other side of the world that's already incorporated into a trading program?

MR. HELM: Absolutely. And that's my point, you'll have a really well-documented set of reductions and strategies and plans in most of the countries in the rest of the world. So you'll know that, if you're getting a ton it's a ton. Maybe a question in Russia, but generally you'll know.

MR. MARGOLIS: Okay. And the last question is, one of the programs that you described was RPS's. From your perspective, as somebody who's been involved in these programs for

about 20 years now at least at the Center For Clean Air, does it make sense to have an RPS program? Do you have the kind of benefits that you want from an RPS program that doesn't have the trading component?

If you simply say "increase your renewables by 20 percent" do you get the kind of cost-effective renewables without the trading component in that RPS program?

MR. HELM: I think generally it's better to have trading. The tricky part of RPS's is, you know, who defines, you wouldn't want to trade with Niagara Falls. New York has a very different definition of renewables than you guys do. So that's the tricky part about state programs linking up.

But as long as your programs are comparable, and say you work regionally with Oregon and Washington and Nevada and what have you, and define renewables in the same way, then there's absolutely no reason --

MR. MARGOLIS: But let's narrowly define it. In the state of California, if you have an RPS increase to 17 percent by such and such a date, are you better off with -- and it's only

focused on California -- are you better off with or without a trading component in the RPS?

MR. HELM: Better off for what, it depends on what you're trying to optimize. if you're optimizing for cost, then obviously the broader the trading then the lower the cost, but some states might have the view that they want that renewable in their state, they don't want it to be in --

MR. MARGOLIS: Well, if it's in the state.

MR. HELM: Then it depends on what your political goal is, what your policy goal is. Certainly from a pure cost, development and renewables as well as the renewable definition is the same in every state, then the broader reach is obviously better.

MR. MARGOLIS: It seems like if you have a lower cost then you get more renewables.

MR. HELM: Absolutely. And the same thing with CO2.

COMMISSIONER BOYD: One thing with RPS, I mean, to the extent that it reduces greenhouse gas emissions, you're a player on the world scene, as Ned just said. If you're getting criteria

pollutant reductions, which you do get if you have more renewables and less fossil fuel, then you start not only talking about, you start talking about geographical benefits.

I mean, very specific to areas. In fact, in California you have a distance based reduction for the benefits in criteria pollutants, because the benefit is really more geographical than it is statewide in nature. In fact that's been something we've been talking about recently with our RPS and credit, the REC's as we call them.

And with no state boundary limitations there's good news and bad news in that. So it depends on the objective you're trying to meet sometimes, just isolating it to the subject of the benefits of RPS, which is the benefits or renewables, and any scheme of market or renewable emission credit market programs and what have you. And that's the struggle with it.

MR. MARGOLIS: The filter I'm putting on is, this committee is focused on greenhouse gas.

COMMISSIONER BOYD: Greenhouse gas, it's the world of nature. Abby?

MS. YOUNG: Thank you. That was a great

presentation. When we're talking about a cap and trade program, what are the mechanics behind ensuring, particularly when we're talking about cross-border exchanges, whether interstate or international, to ensuring that emissions aren't simply moving around, but there's actually net reductions overall, which is the whole point.

How do you develop a program where you can ensure that that happens?

MR. HELM: Well, there's two things. One is data quality, okay? You've got to have confidence that what they're measuring is really emissions. That's why I made the little joke about Russia. I mean, one of the problems is that the data quality is really questionable, so do you know that they really made the reduction when they sold you the credit.

And the second one is -- I lost my second point. Ask your question again?

MS. YOUNG: I'm guessing. Your second point is in how you set the cap, in ensuring the overall reduction?

MR. HELM: Exactly. You've got to know, that comes back to data, you've got to know what the baseline really is. Example, in this New

England, Northeast RGGI kind of piece, in New York their base case, they're 20 percent below 1990.

So if this program comes out and says the target is 1990, New York is like retro, they're getting hot air. So you really have to know what that baseline is for each state and look at that, and that's what it -- if California were to try to join the Kyoto program, let's say five years hence, they would say "all right, let's have a look at California's baseline. Are you really forcing reductions are you giving out things? Are you doing what Portugal is doing, giving all their industry 20 percent more than they ever emitted."

I mean, that's crazy when that happens.

MS. YOUNG: And then when you're talking about doing this internationally, who is the "they" that's determining the legitimacy of the baselines in that case?

MR. HELM: In the Kyoto Protocol you have a set of provisions for going in, under Article 5, 7 and 8, to look at the quality of data systems. You send in these expert review teams to look at the data and ensure the baseline is right and so on.

In this case, like with RGGI, when

you're talking about utilities, we have continuous emissions monitored data for every plant in the country for CO2. it's require under the 1990 Clean Air Act. So we know where we are on utilities. On industrial sources, my point about the baseline, until we really know what the emissions are it's very dangerous to say "well, we're putting you in here and you can trade."

Because what we found in Europe, when the program was a tax in Eastern Europe, we used to do a lot of work in Eastern Europe, they used to have a tax on emissions. Well, of course, boy, the emission levels were really low.

And now there's a CO2 program, where your emission level determines the cap, "oh, we made an error, our data is actually 20 percent higher than we've been telling you, it's a terrible mistake, could we please have this back." I'm not joking, this really happened in slovakia and the Czech Republic. so it's all about the data, it really is, that's why the mandatory reporting is so important.

And it's more important to do it now, before you enter the trading system, because you build that baseline. In Europe, that's one

problem for Europe, they don't have great numbers on their industrial sources, just like we don't in this country. So --

COMMISSIONER BOYD: The air quality people in California have the experience of re-claim in the South Coast District. Ben?

MR. KNIGHT: Thanks for the interesting presentation. If you have the cap and trade program in California, maybe in the utility sector as an example, you talked about buying credits outside the state, outside the country. Politically, is that going to be difficult, if California in effect was a net purchaser?

MR. HELM: I think it depends on the state. I mean, the record on the ground in different countries is different. I mean, the Netherlands set up a fund, legislative attacks, and collected the money, and set up right up front they were going to buy 50 percent of their Kyoto target up front. They got approval of the legislature and everything. And it's gone through fine.

Other countries have gotten tremendous criticism for the idea they'll buy from Russia, or from Japan, you know, Japan buying from Russia is

an example. So it really depends on the politics in your state. I think at the end of the day there's probably less inter-country, international trading than you might expect, if you just look at the numbers, because companies are going to say, you know, at the margin, making that kind of investment with my company, as long as the price difference wasn't that much, I'd probably stay here.

And states will say at the margin, I'd rather have you make that investment here in California than go somewhere else.

Now, if the difference is dramatic and the effects are very tough in terms of the economic effects, then maybe you go for more of that buying and selling. So I think there's a political reality there that we can't ignore, it's not as simple as the economics.

MR. KNIGHT: Well, if you set it up like you said, it sounds like you almost have to fix the rate for a year, give industry a constant rate and maybe make that a global rate. Otherwise you're going to the lowest cost credit source that's typical of industry.

MR. HELM: Well, you do want to go to

the, you know, you're trying to set, what Europe tried to do in that part of it is they said, they have rules about fair trade within the 25 countries. So you can't subsidize the steel industry in your country, you have to be the same as me, I can't advantage my industry over yours. That's a law under the European Union.

So when they looked at these targets, they looked at them and said is this going to start to torque trade? Because the UK came in with targets 20 percent below what those sectors would need to do. They just hammered them and said you guys are going to do it all or we know we won't get anything for transportation.

Germany went the other way and said oh, let's take it easy on our industry because they're in a competitive market and let's say we'll get it from transportation. So obviously the UK and Germany have a very big imbalance.

Now, the Commission didn't have the political will, it's a new program, it's the first three years, you know, they, talking to them privately they said we're going to reject that German plan.

They couldn't do it, because the

political heat was too great, they let it go through. But I think over time you'll see that, because they do have a trade rule that says you can't buy --. So you want the target to be more or less cost-effective.

But the point of trading is you find some of these gems, like this thing with HFC's in India, it's a huge opportunity. And we didn't know it was there, you know.

COMMISSIONER BOYD: Robert?

MR. PARKHURST: Thanks again for the presentation. I guess my question is more towards you, Commissioner Boyd. Using some of the information presented here on the New York policy scenarios, there's one of the signs, if you could put it up there where we've got the different emission scenarios, high, low and medium, and they've got, if the recent New York actions are taken, they're down it looks like five or ten percent, what's the scenario for the state of California?

COMMISSIONER BOYD: The state of California doesn't have a scenario yet.

MR. PARKHURST: Should that be one of our charters here, because that seems to make a

lot of sense is that we go and we set that scenario and then that allows us to understand where we need to make these gains. And going back to some of the conversation we've had today about where to get the biggest bang for the buck.

COMMISSIONER BOYD: Well, we've danced around goal-setting and scenario-setting all day, and I'm going to let the advisory committee advise, but -- I think I'll just --. A, we don't have scenarios, we don't have a goal, yet. And we've got multiple activities going on. Let's see what we can generate here.

MR. PARKHURST: But that doesn't mean you're expecting us to do that, do you? You're not looking for this committee to draw those charts, are you?

COMMISSIONER BOYD: No, you're going to suggest, I think, ultimately some strategies that you think are good strategies, and we'll do the staff work.

MR. PARKHURST: Okay. I think you might find a consensus around this table that we'd like to know what it is the state of California has to do to end up with a chart like that. And if you can do that, if the staff can do that, if the

scientists can do that, we sure would like that. Because we don't have the wherewithal to do that right now.

COMMISSIONER BOYD: Well, I'm sure each one of these lines has a menu of strategies behind it. And what we're asking for is give us some good scenarios, and we can do the plotting.

MR. HELM: And you can see all these measures on our website, the details and the cost and so on.

COMMISSIONER BOYD: And we've got stuff, I'm just trying not to influence you, because you might have better ideas than we have, and if we publish our ideas then we're in the political soup already.

And some of the pricing and market approaches, as I hinted earlier, have been rejected in some political circles, and I guess I'm looking for a distinguished group like this to give us some ideas of what's a good idea to make it more politically palatable in this state.

MR. PARKHURST: I guess it's hard to know that without knowing all the programs we've got and what the impact is. And I guess that's one of the things that I'm struggling with is

that, if we're looking for that handful of programs to go after, we don't know what the impact of Hadley's bill will have, we don't know the impact of some of these other ones.

And it seems to me that that makes a logical first step to help us to look for those other opportunities to go forward.

COMMISSIONER BOYD: Well, we can give you data on what the results, the impacts are of existing programs. I can tell you, that's what the ARB had to do for its regulation, you know, what do they expect out of us. Staff can provide that information. We can provide what we think all of the efficiency and renewables programs have done in California.

It's a part of the calculation. Yes, we can give you kind of a baseline for that which exists. Right, Susan?

MR. PARKHURST: Fabulous. Thank you.

COMMISSIONER BOYD: Ralph?

MR. CAVANAGH: And indeed, Susan, just to follow that up, there has been some good scenario work, at least in a preliminary way, done for the three stated issues. Let's get that around when we can.

For my colleagues, many of the policies we've been talking about I know are being modeled there. You'll want to see that.

I would say specifically, Ned, I think if you have some things that you think the states have done in the areas of freight and aviation fuel in particular that you view as promising precedents, that would be very helpful to us. That's an area where we at least are wanting to see more.

On the question of trading in the European markets, the -- and I want to be sure I understand what you're recommending -- because this is an interesting area to get into. Right now, I take it Europeans are more than happy to take California's money for emissions reductions. That is, we can buy emissions reductions in the European markets. They'll take our money, they'll retire some allowances.

The political consequences of that, California sending some money to France, Germany and other parts of Europe to do emissions reduction, is I think only predictable and negative.

But if the California market were

reciprocally open to investment coming back, it would at least be a much more interesting proposition. And I took you to be suggesting -- and I had not heard this before and I want to make sure that I'm right about this -- that you think there's a chance that California can qualify both ways; that is, not only as a buyer but also as a seller. Even though the United States has not ratified the Kyoto treaty.

Now, is that what you're telling us?

MR. HELM: I think there's the possibility. I think if, you know, if we had a crystal ball, who's going to win the election, you know, makes a big difference. If we had, I think it's a possibility.

What I think it comes back to, the point I was trying to drive home, Ralph, is the Europeans will set some standards for what they'll recognize, in terms of another country, another state's program. And my sense is California's got a number of the pieces already in place. A tough target and another set of measures as part of that package could be credible.

MR. CAVANAGH: It's possible now for a state, as opposed to a national government, for an

individual state to seek that kind of recognition under the Kyoto structure as you understand it?

MR. HELM: Not under Kyoto, Kyoto doesn't allow it. The country is what counts. The country has to ratify. What I'm suggesting is there may be some wiggle room. Let's say Kerry wins and he's much more positive, he works with Europeans, etc., etc., they begin to see some good programs in the states, maybe they agree to recognize a couple of them, that sort of thing.

At the moment, no. If Kyoto fails, it's possible, but I don't think Kyoto's going to fail, and I wouldn't want it to fail.

MR. CAVANAGH: That's a very helpful clarification. My final comment, Mr. Chairman, is the discussion about the California RPS convinces me once again that we need to be very careful not to redesign things we don't fully understand.

The one thing I want to assure my colleagues, having spent some time on this, is that the California RPS does in fact open to the entire western interconnection. It is not limited to renewables in California.

Chairman Boyd has the unenviable task of working out all of the rules surrounding what is

truly an interstate market, but it should be clear, this was not a parochial, California only policy, and I am very confident there will be abundant trading elements when it's done.

We've got some work still to do and we've got some legislative progress still to make, and I'm suspecting -- although I'm open to the discussion -- that there are enough people working on those issues right now so we may not need to jump into them.

MR. HELM: Let me go back to your assertion about buying from France. I disagree that it's negative. if California buys credit from France, those are additional reductions that have been made. That's not a second paying for the same credits.

MR. CAVANAGH: I will stipulate that those are real reductions, abundantly on it and genuine in every respect. What I'm saying is it's all one way. If all of the dollars are going out of California to buy reductions outside California I predict a negative reaction. And we've got to anticipate that.

And I'm suggesting that the way out of it is to create at least some prospect of

reciprocity, trading is supposed to go both ways. You were starting to describe a way that it might happen, I want to see if we can pursue it.

MR. HELM: Okay, good. I just wanted to make it clear that the environmental result is not negative. I agree they're may be a negative political reaction.

COMMISSIONER BOYD: Okay, Peggy?

MS. DUXBURY: A nice presentation. I'm a little hesitant to do this, because I think I'm going to be defending Texas here in California, but it's probably where Calpine has its second most facilities, is in Texas and second to California.

On your chart, when you showed that Texas was the largest emitter in the country, that sort of surprises me, because they're not a big coal state. And in fact if you look at a pounds per megawatt hour basis, at least in their electric power sector, they're below what other fossil fuel states are.

And I'm wondering, in California do you include the imports? Or is that just, because 15 percent --

MR. HELM: No, this is just fossil fuels

burned and releasing CO2 in the state.

MS. DUXBURY: In the state.

MR. HELM: Right, the reason Texas is so high is because of the petrochemical industries and the refining industries, oil and gas. There is a significant utility portion because they have Texas lignites, they have some coal, but it's not all about utilities, it's much more about industrial sources and petroleum.

MS. DUXBURY: So I think before we feel too good in California we have to note that that number, if we were to include imports, would be higher than what's showing up on this chart.

MR. HELM: That's true.

MS. DUXBURY: And I do think there are some lessons in Texas on the efficiency side that we can learn from. I think Texas, in their -- most of what you see in Texas, you know, from the power sector side at least is within Texas because it's kind of an island in generation. It does not import or export much, it's pretty much a self-contained entity, unlike most of the rest of the country, New York or California.

And one of the things that they have done, the driver was certainly not to deal with

CO2 in Texas. I don't think that's on anybody's radar screen in that state right now. But they have really put into place some really strong incentives to encourage efficiency.

And Calpine's most efficient power plant in the country has just opened up in Texas. It's about a 6,000 heat rate gas plant. And the reason it gets to that level is because it's got a large CHP partner. Texas has become a mecca right now for combined heat and power, which really is almost a renewable resource. Um --

MR. PARKHURST: What do they do?

MS. DUXBURY: What was driving a lot of the CHP in Texas is, the Houston air shed is under such pressure to clean up through non-attainment that you're really seeing, you've got a good marriage of need for new generation, gases on the margin, and you've got a lot of industrial users right there in the Houston corridor that are needing to close down old industrial boilers and are using steam heat from new gas-fired generation that's coming on line.

So, I think there are lessons besides just looking to the RGGI process in New York. I actually think that when you're looking for

driving efficiency, which is one solution to all of this, that Texas has put some good policies into place.

And we all ought to not just assume that if it's Texas it probably doesn't move in that direction, because we're surprised, and I'm just starting to look more at some of the CO2 impacts that are coming out of Texas.

Texas is also putting a lot of wind generation online as well. It's got some transmission concerns, but they've really done some incentives to shut down some of the older plants in the state and to bring on new renewable resources.

MR. MARGOLIS: Ned, what do you think that bar would look like if you included California's emissions that are generated out of state?

MS. DUXBURY: We thought they were about half of --

MR. CAVANAGH: It would add about ten percent to the statewide total. It would drive -- remember what it does. It takes the generation sector from 15 percent to 30 percent. And so you can figure out that in terms of total emissions

it's about ten percent. It should be there, but it's not going to dramatically change the parameters.

MR. MARGOLIS: Do you think there are other sorts of leakage besides --

MR. CAVANAGH: No, that's it.

COMMISSIONER BOYD: Howard?

MR. GOLLAY: Thank you. I wanted to build a little bit upon what Abby was saying earlier. This will take a few minutes to give my thoughts and I hope they're clear.

I still believe it's premature. I know there's a lot of appeal to some people to have a cap and trade system at this time. I think it's more important that we get accurate reporting by all the industries, so that we at least know where we're at, before we start developing a cap and trade system.

I mean, we heard that baselines are important. So I think the focus right now, in terms of either caps and trade or reporting, should be on the reporting aspects, not on cap and trade.

Europe, let's be clear, Europe has mandated CO2 reductions, and it has a trading

program because they are members of Kyoto, and it's as simple as that. That's why they're in to the marketplace, that's why they have reduction goals, and that's why they have cap and trade.

The Kyoto Protocol is a very complicated thing, and I think a lot of us around the table know that. The Kyoto Protocol, they have spent years and years trying to understand and define what a clean development mechanism is, in terms of the protocol by those instruments themselves.

My suggestion to the group here is why get caught up in the complications associated with Kyoto? Why not make things simple, things that we can do right now? Why get into this mess of determining what are equal commodities?

I can tell you, I was the principal behind the first international trade in the CO2 emission reduction in the Ontario power generation. And I can tell you, it took months and months to make that trade happen. One of the issues itself was what the commodity itself was, what we were selling to Ontario power generation. And getting it certified by their governmental organization.

So, these are some suggestions, and I

just think that, focus on reporting, and focus on things we can do now and work toward it in the future. Thank you.

COMMISSIONER BOYD: Jason?

MR. MARGOLIS: Thank you. Ned, I was hoping you could describe a little bit more the relationship in the European Union context between the non-trading and the trading sectors, and maybe if we can sort of think about it in the context of California.

You tossed out the idea of electric plus the industry sector cap, and maybe you can sort of characterize how that cap and trade system might relate with the transportation sector, which accounts for half the state's emissions inventory?

MR. HELM: In the European system you have a given target for a given country. And they have to submit a plan that shows how much they are going to achieve in the cap and trade group and how much they're going to achieve in the other sectors.

In the other sectors they can have what they call policies and measures, you know, what they call carbon pacts with the industries that aren't in, they have volunteer agreements on

efficiency improvements, etc. So all sorts of things.

In addition, they have a provision where you can do what's called joint implementation, which basically means set a baseline for a project, show that you beat that baseline, and count those credits and sell them to the people in the trading sectors.

And what I was suggesting is, that's one system. But doing that basically says to the people who aren't in the trading system they basically just get the good news. They get to sell, they get money, they don't necessarily have to do anything, maybe to meet an efficiency standard or something like that.

What I was suggesting, another way to do that, we've talked about it in developing countries is, let's say that I've got a project, let's take Cynthia's example with the biodigester. I've got a manure farm, and a whole bunch of cattle, and we basically collect that manure and we can generate electricity and so forth. Very attractive economics and so on.

In the European system you could take all of the credits that generates and sell those

straight into the market, okay. What I'm suggesting is you might want to look at saying, all right, let's say you generate 100 tons of reductions, maybe 75 tons of sellable, and 25 tons are given to the California base to try to, it's agriculture's contribution to the California base.

It doesn't have a cap, this is all voluntary. The farmer decides that he wants to do the biodigester industry, he doesn't have to do it. But if he does it he makes some contribution towards California's larger goal, and then he gets to sell a portion into the market. And you can set that rate at ten percent ninety, or 50/50, however you want to do it.

So there are ways, and let's say we have an industry that's not in, chemicals for example. Chemicals are not in the European program because of all the process emissions, difficulties of baselining, there's tremendous opportunities for gaming the deal with a chemical company, because you have so many different products and, you know, is that an emission because I was making xylene or I was making something else.

Very tricky, but maybe chemicals can be done in some other way that scores these as

projects that are bona fide and really solid, and some portion of that is for the atmosphere, for California's overall program, and some portion of it is sellable into the market.

So there are ways to link the programs. Josh was alluding to this with your Hadley bill. Originally it was drafted as, you know, well maybe it's a chance for offsets, maybe the car companies can buy reductions from the electricity companies, it didn't turn out that way in the rules.

But that's the kind of idea, you know, you have a program for a sector, it's not in trading. And you set up a way so that some portion of that can be sold into the marketplace, or are brought, either way, to the marketplace.

COMMISSIONER BOYD: I'm going to call on Bud Beebe next. And I'd just mention for the record that some people saw Jan Schori leave earlier and Bud Beebe of her staff is here. Bud, please thank Jan for coming. I mean, she came here on a day when she had to leave to go to her board of directors meeting and drive all the way back to Sacramento.

I'm not sure I would have had the courage to leave town for a few hours and then go

back to a board meeting, but anyway --

MR. BEEBE: Commissioner Boyd, she told me that, after hearing how important public power was to this whole issue, she needed to get back to Sacramento immediately and work with the board, so --.

(laughter)

I was reveling in Ralph's description of this fully developed trading program with people, you know, funds flowing out, funds flowing in, I'll say technology flowing out technology flowing in and economies developing around that and so forth.

But as much as we want to begin to develop that, and I think that we really should begin to develop that type of robust trade, we're not there yet. And as we sit at this nascent point we need to look at not selling off, if you will, the family jewels before the market has fully developed that kind of a situation.

In particular I'm thinking two things could skew the market, and we need to think them through. One is that, on a per capita basis, and in fact in several specific industries -- I'm thinking the electric utility industry -- the

specific emissions of greenhouse gas is relative to our product output, kilowatt hours or whatever, energy output.

We're very low relative to the rest of the country and most other places in the world, not everywhere. And secondly, on the west coast anyway, we have made a tremendous investment in renewable energy in the production of electricity and certain other places, and those investments will bear fruit for California economy, and they will help with our greenhouse gas reduction.

But since we have such a low specific initial emissions from the electric sector, I don't think that it's going to look particularly good on an economic basis to develop renewables further in California. And that's the wrong thing to do. I mean, we know that the right thing to do is to develop renewables much more than what we have today.

It's the right thing to do. We're going forward with that. But we have to make sure that, as we do that, it doesn't get discounted by the fact that we've already been pretty good at it, and in fact our historic set was high in natural gas and high in hydro when we started out.

COMMISSIONER BOYD: Ben?

MR. KNIGHT: You spoke briefly of an example of industry, let's say a large manufacturing operation. I think you used the example of there might be problems in the baseline, baseline might tend to be very low. Would you compare cap and trade for a large manufacturing industry versus energy intensity, since maybe the grid or the power source is handled by someone else?

MR. HELM: I think the real question with the energy intensity versus the cap and trade is that, with the cap and trade you have certainty of what level of emissions that company will have at the end of the period.

With energy intensity, if I add more shifts to my plant and I build new plants, I might build more efficient plants so that my energy intensity declines as a company as a whole, and I might have aggregate emissions that actually rise or, maybe they don't rise fully but, you understand what I'm saying.

So it's sort of a question of, you know, can you afford that headroom? If you're in the European context and you've got to meet this

overall target -- and some of the countries have done this, they've given intensity targets to the chemical industry -- that may lead to improvement in efficiency, which is a good thing, but it may actually lead to some increase in net emissions, which will mean they've got to make it up somewhere else.

They've got to buy credits from some other country, they've got to get more reductions from transportation, it's a zero sum gain. So you combine uncertainty with intensity. And I'm not saying it's a bad idea. Certainly Europe was very interested in the intensity because they were particular for internationally competitive industries they wanted more efficiencies, that makes them better competitors.

So it's a good investment to go for intensity efficiency kinds of things.

MR. KNIGHT: Also, I think there's an issue of what's fair across the industry.

MR. HELM: Because with a pure cap you punish those who are growing companies and you reward those that are getting smaller. Europe actually said we will not give you credits for shutdowns. So if you're a steel company, and you

shut down a steel company in Portugal and move it to some South American company, we don't give you any credit for that. You've got an allocation for that steel mill. You shut it down we take the credits back.

Which is different than the U.S. programs where a shutdown, you can keep the credits.

MR. KNIGHT: What do they do with those credits?

MR. HELM: They retire them, they put them toward the European overall target.

MR. KNIGHT: So it's applied to the cap, but the company doesn't get that benefit?

MR. HELM: Right, right. There's no incentive for the company to shut down and move.

MR. KNIGHT: So there's no incentive for a dirty company to shut down and be replaced by a clean company?

MR. HELM: Right.

COMMISSIONER BOYD: Abby?

MS. YOUNG: I wanted to get back a little bit to what Robert was talking about. Can you put that slide up with the lines for the New York state targets? I think you know which one

I'm talking about -- yes, there you go.

And what I'm thinking could be helpful to us, based on information that probably already exists, so it would be I guess pretty easy to produce, something that looks like this, where we would have a point that is the state's baseline level of emissions, and a business as usual forecast line, like in that slide. Both pieces of information already exist.

Then we could have a line like that second one, the orange/red one, that shows the quantified impacts of what the state is doing to date, sort of that inventory of existing policies and practices which I think that was what Susan said could be put together pretty quickly.

Then maybe a couple other lines that could even be arbitrary, that could show this is the line that demonstrates achieving a 20 percent reduction target below baseline or at baseline or whatever, by 2050. This line would show what achieving a 50 percent target would look like.

Now, that's not based on any scenarios of what we would have to do to achieve those targets, it would simply be based on baseline levels and forecast levels. And that could allow

us to see, as we are coming up with ideas for recommended actions, the impacts of those recommendations on that chart.

And we could visually see, are we getting anywhere, or are we not. Because what I don't want to have happen is where it's June, and then we look at the impacts of these things that we've identified, and we find out it's not even making a blip on the screen. And that's not a good place to be in.

So maybe if we could do that kind of process, coupled with then looking at what years, I mean looking now at what do we want to end with at the end of this year. We could probably start moving pretty quickly ahead to filling in the dots.

And when I say what do we want to end with at the end of the year, I was very interested in that Connecticut process that you were talking about, where it seemed they went through a stakeholder process, an input process, similar to this, and their end results were some initial specific recommendations on actions and the complete acknowledgment that that's not getting to the target that needs to be arrived at.

But then a process, a recommendation for a process of how the state would continue to move forward. So maybe looking at it that way might be something that we could achieve.

MR. HELM: Because these lines are basically built from a whole set of individual measures. We're going to report that we have all the measures that add up to these lines. and then if you look at the next graph, this is what New York actually chose to do. The measures that they were willing to do only get into this middle line, you see it? And they got New England to go along with them on utilities.

So you see, they set the target here, early in the process, and then when it came to biting the bullet on the measures it was tough to get there. And they didn't do what Connecticut did, which is to say all right, Connecticut got to 70 percent of the target. If I had Connecticut it would be about halfway between those two lines.

And then they said all right this is how the process would start, a process to identify what those are, recognize we have to push technology, there's going to be new stuff we haven't thought of, so it's not surprising we

didn't quite get there.

MR. MARGOLIS: It would be neat to see what a Kyoto line would look line for a California chart that --

MR. HELM: This is for New York. Kyoto is what New York picked, five percent below, that's what that target is, for 2010.

MR. MARGOLIS: Right, for the chart that Abby was describing it would be interesting to see that Kyoto line.

MR. HELM: And I think, working with Susan we'll have the numbers for you on these first couple of curves, and I hope this will build the rest of them. And that was the point, Josh you were questioning Susan on going into all the details of the measures.

I think, to get these three lines you've really got to go and look at natural gas compressor stations, and, you know, biodigesters, and so on. All of those building dots are all small, but it's like those, we need every little one to get to enough tons. There aren't many silver bullets, there aren't any silver bullets basically.

MR. MARGOLIS: And another, the other

line which I think we talked about is I'd like to see the lines which address the presentation this morning. What do we need to do with low, medium and best case, from the scientist who spoke this morning.

MS. DUXBURY: You know, another line that might be useful is something like the McCain/Lieberman targets, and what would, applying them here in California, what would that line be as a possible goal for us to look at.

COMMISSIONER BOYD: Susan and Tim are down at the end of the table absorbing this. She's been shaking her head positively the whole time. Okay, any other questions from the advisory group?

Now I'm going to entertain questions from the audience, and you had your hand up first, right here in the front row.

Ned, we're going to put you through the ringer, but, you traveled all this distance from Washington, so what the heck.

MR. TSENG: The gentleman suggested I should mention my name again. I'm Alex Tseng, I was chief electrical engineer on the Lawrence Lab co-linear accelerator for almost 30 years. I

retired almost 20 years now, but I'm very much interested on the energy area.

I want to congratulate the author who presented his paper. Could you go back to your first chart, the bar chart, that shows the CO2 emission? That's it. You notice the chart was actually dated for the year 1998.

You notice the chart down there shows China has over 650 million tons of discharges. Very little it was addressed. I want to give some credit to the state of California energy department.

First place, let me just introduce, where are this tonnage come from? Sixty percent of tonnage comes from coal gas. China mines over a billion tons a year of coal. The gas gets out is vented out.

So, starting 15 years ago a private company here in California I'm heading up introduced to China that we should use the American technology drilling the holes to get the gas out and make it pure gas, and make use out of it.

Five years ago, here in the state of California, I presented this article in the Los

Angeles, California meeting. I suggest that we have the technology to use this gas to make for transportation use. For example, here in Palo Alto all our utility trucks use compressed natural gas.

So it's duck soup for the California industries to go to China and invest in compressed methane gas, because there's no difference between methane gas and natural gas.

So we can produce a market for us and also save the world. And also save China to buy petrol gas from Russia and from Saudi Arabia. But it is still a good challenge that as yet has not been fulfilled.

So I would say to the state of California we can do a more important thing, rather than trying to encourage energy efficiency from 9,000 BTU to 6,000 BTU in order to produce 3,415 BTU of electricity kilowatt hour. We can accomplish much more by reducing the methane gas through ventilated air.

There are so many ways we can do it. I would like to work with the advisory committee and so we can get credit for it. Thank you very much.

MR. HELM: I forgot to mention, in terms

of your comment earlier, there are two examples of countries that have done what you were suggesting about pushing individuals to do things.

Japan has a very aggressive program where they call in citizens to meet a certain goal in terms of renewable energy use and investment, and they pay a lot higher prices to do that.

And Canada has a challenge for citizens, they've set a goal -- I forgot, it's in kilograms -- but certain number of kilograms and carbon per year for every citizen in Canada. It's been fairly successful. It's a PR effort, but it's helping people to say all right, how much energy do I use in my home, how much carbon do I generate, sort of doing your own audit. Very interesting, I think it is an important part of it.

COMMISSIONER BOYD: This gentleman.

MR. ASHFORD: I'll jump up. Greetings from your neighbor from the north. I'm Michael Ashford from the Climate Trust. I have a few comments.

I think the first comment, it's a general comment. My boss, who's actually a member of the advisory group in Oregon, sends his

greetings, he's unable to come. He's closer to the process than I am, of course.

But I urge collaboration. I think there's a tremendous amount of opportunity from cross-border sharing of experience and responsibilities, and initiatives as well.

I think we might have a few near-term initiatives that we can work with in Washington, Oregon and California that are going to show some real benefits for the people, for the states, and for the economies in all three states, and we look forward to working with you on that. The rest of it, I think, is confidential until all the drafts are out and distributed.

A second comment. As a deputy director of The Climate Trust I want to second and commend Ned for that great background on trading. We're also an active participant in the movement to get trading going and figure out ways to do that.

Calpine is on our board, perhaps reluctantly in some ways, insofar as they may not be in total agreement with what's going on at the political level, or the legislative level in Oregon, but I think there's an explanation for that.

And I wanted to get back to a comment

that I've heard from a few people about Oregon, and the standard in Oregon. And I think it's important to put it in context and not to throw the baby out with the bathwater when you talk about what's going on in Oregon.

And something I've learned working internationally and with different states is that the legislation comes out of a political culture in a state and also technical background and data that's now coming together in all these states that's specific to the state.

Oregon had a very large hydro base and some nuclear developments. And I only learned how to pronounce Oregon correctly myself, so I learned this recently. And this legislation grew out of that political environment, and environmental policy in Oregon, and the 17 percent is below the best available commercial technology today.

So it's actually a licensing permit on a margin that was always going to be gas and not likely coal, because of the political environment. There wasn't much existing conventional fossil fuel to regulate, so it made sense to build a cap against the marginal and new capacity.

Nobody was really worried too much about

existing capacity in the state because it is a very clean state in terms of the state capacity.

And then the advantages, a very clean technologies like Calpine's, because they're punished less than others because the standard is a technology standard in terms of the emission reductions that are achieved or the, in this case, the fees that are paid on emissions above the standard.

I didn't know that until I got to Oregon, and I'm more on the buy side. We're taking those funds and we're going out and we're finding real projects that we can verify and measure and contractually bind the sellers to to buy offs.

So I just want to make sure that, when people talk about Oregon and Washington now, that they understand. And I think for me it's been a learning process as well, why those emission standards were adopted that way, and how they actually may fit and may be appropriate for the given state and not appropriate for another state.

But the result has been several million, four plus and going on six million, investments in projects that reduce greenhouse gases in a

measurable, contractually binding way. So I think that is very important that we get the best lessons learned. Please call the The Climate Trust if you want to learn more about the successes we have had.

We recently made our five year report to the Energy Facilities Siting Council in Oregon about what we've been able to achieve since the statute was passed in Oregon. And we look forward to working with all the other states, particularly California and Washington, on ensuring that our lessons learned get out.

And we're working with the RGGI folks as well, a little bit, on making sure they understand how that process works.

Finally, last comment, as an individual, I think goals and targets are absolutely imperative because, as Ned has pointed out and as I think some of the comments have made, have come up, and this is as an individual who is concerned about climate change, it's going to help us tremendously in establishing what the priorities are.

And until you can get those graphs, which I think are coming for California and

they're coming now for Oregon as they've already been published for New York, it will be able to start to indicate, as the process has shown in Oregon, what can we do to get towards some kind of goal. Whether we're going to commit to actually getting there or at least know what we need to do to stabilize the climate.

Without that it is really just kind of throwing darts at what is going on, and it becomes much too much of a political process of what is already a very political process. Without those goals against which we can measure and put metrics on certain activities, I think it's going to be a very difficult process to get to the next first steps, the initiatives.

What are the priorities, where's the biggest bang for the buck, in the next three years, what do we do in ten years, and what do we do going out to 2050, which is what I think Oregon is putting out in its draft plan, and I think that's going to be coming out. And the other draft plans for other states. Thank you.

MS. DUXBURY: I think one area where The Trust has been really helpful is they last week announced an exciting program on truck idling, and

we've talked a lot about freight, which is not an area that I have a lot of expertise on, but The Trust did do a really cool program in trying to reduce emissions from trucks. And I think we could learn some lessons here from what they did.

COMMISSIONER BOYD: This gentleman here, and then you after him?

MR. COALE: Hello, my name is David Coale with a local environmental group, Acterra. And I would like to thank the Commission for holding public meetings on important subjects like this, I really appreciate it.

Kind of keying off of Commissioner Young's and Ralph's comments in terms of the lines or standards you might set, such as New York State did, it seems that the obvious first line is where California is with respect to the rest of the country, which gives us "credit" for the good work that California is already doing.

The next line of course would be the Kyoto Protocol line, which, if we got down to that level, would possibly allow us, as Ralph indicated, an international trading capability to further our reductions. The medium line perhaps, maybe you want to set it at the lower line, would

be the CO2 stabilization line for world CO2 stabilization.

That goal is a big one, but that's where we need to be eventually, make no mistake about it, that's the end goal. And then you might do a line a little bit below that. In starting with these CO2 emission lines, if you will, it will then be clear as we seek solutions to these, where California can actually go. But they seem to be obvious first steps for achieving.

And certainly the zero or world stabilization CO2 limit is where we need to eventually set our goals to, as much as they may be very difficult to look at today that's where we need to be, as we saw in the other maps, of the effects of climate change in California nearly a hundred years from now, it's catastrophic.

So, make no mistake about it. Perhaps these lines will give you guidelines of where to go and then how to meet them. Thank you.

COMMISSIONER BOYD: Okay, and let me ask a question. Any of you who are really asking questions of Ned or what Ned said I take you first, and then I'll let Ned sit down, and then we can have the rest of the public discussion for

those of you who just want to make comments.

So anyone who has a question aimed at the discussion that we just had or specifically to the speaker. If you don't, I'll let him sit down, and then we'll just continue with the comments. I guess, Ned, you can sit down.

MR. HELM: Thanks, Jim.

(applause)

MR. RITSON: My name is David Ritson, I'm an Emeritus Professor of Physics at Stanford. I just had a very quick couple of comments. Everybody's talking about a bigger bang for the buck, and that's clearly politically very salable.

What worries me is, you can talk about a bigger bang out for next year, you can talk about a bigger bang for something that's going to take three years or five years, you can talk about a bigger bang for something that's going to take 10 or 15 years.

My strong feeling is that there isn't one category, there are a series of races. Namely, there's the race where there's the immediate advantage of what you spend. There's a race for a five year or ten year, and then there's a race for the 50 year.

And it's particularly important for climate warming because there isn't any one solution. If you try looking at one magic bullet you'll find that you have to have something like 100 times the nuclear power capability that you have at present. You're going to solve it through ten or 15 or five or seven approaches. Okay, that's one quick comment.

The other quick comment is simply that you shouldn't forget, there's the pump priming process, there's the seed money process, there's the investment process. And I feel all these are kind of separate categories again. And I just am appealing for in a sense letting a thousand flowers bloom on this, but be ready to chop off their heads in a few years time or a years time.

COMMISSIONER BOYD: Thank you. Well said. Jane?

MS. TURNBULL: Thank you all for a very interesting day. I haven't thought about global climate change in several months. I think all of the input is important, and I think David's most recent comment is a particularly important point.

I'm Jane Turnbull, I'm here as energy consultant for the League of Women Voters of

California. One of our concerns is that you don't focus on the low hanging fruit. That's always an attractive place to go. I think the idea of having some good idea in terms of what the current situation is from an industry perspective and from a sector perspective is a good starting point.

And then I think it makes sense to have each of you around the table, who are acquainted with these industries, take a look to see where the emissions really are coming from and begin to identify what changes can be made.

Certainly an easy place to start is by improving heat rates and that sort of thing. But there are other ways of doing things.

I would suggest that maybe we begin to think about case studies, and look to see what particular changes in a process might actually mean in terms of the greenhouse gas implications.

That is a process that's been done by the International Energy Agency through some of their tasks, and I was asked by DOE to go to a couple of their meetings in the biomass arena when the DOE people were not authorized to go.

I found that the individual countries are doing case studies of specific process changes

that could take place, and looking to see what the implications would be. Just an aside.

Another point that I would like to make is that the League has been supporting the RPS standard as a statewide standard this year. So we do want to see the public utilities involved, along with the IOU's.

But one idea that has come out today which I think might merit some consideration, and that is the possibility of having combined heat and power as an option under the renewables agenda if its a conversion of power to combined heat and power. And that might make it a little more easy for a few of the public utilities to meet the standard in a timely kind of fashion.

One last point is the concern about out of state power. I think if we are going to look at out of state power, and I think it's important to do so, we also need to look at the other out of state energy resources that are coming into California, and that includes petroleum and it may include liquified natural gas. And so the greenhouse gas implications of those I think also should be put into the total picture. Thank you.

COMMISSIONER BOYD: Thank you, Jane.

This woman and the gentleman behind her is next.

MS. MULLIGAN: Hello, I'm Helen Mulligan from the Institute of Urban and Regional Development at UC Berkeley. And I wanted to pick up on a point that's been mentioned by the last couple of speakers from the floor, also by Ned Helm.

Which is to look at some of the longer term implications. You see from my affiliation that I'm interested in building and environment issues, and I'm concerned that we don't let the building sector slip through the gaps here. I think, as Abby Young pointed out, the fact that the initial pie charts we were shown separated out electricity production from its usage in buildings somewhat masks the importance of this sector in energy use.

In the U.S. as a whole buildings account for about a third of energy use. It's about the same size as the transportation sector. Both residential buildings and commercial buildings are very important here, and in fact energy use in commercial buildings is rising the most steeply of any sector at all. So we really must address building issues in what we're thinking about.

The emphasis on multi phased tools is a very interesting one here. It's very exciting for policy makers and particularly for politicians to go for low-hanging fruit, the ones that are going to get very fast results.

Buildings have a longer time scale, they take longer to develop, they're around for a very long time, savings in their design and usage are with us for a long time potentially, they go through many changes during their lifetime, and there are very many opportunities within their lifetime to improve their energy performance.

And I want to come back to how trading schemes in particular can best be designed to bring buildings and the savings that can be incorporated in the design and use of buildings into those trading schemes.

It seems to me that the trading schemes that we've seen so far, and I've looked in detail particularly at the UK emissions trading scheme, the ETS, which has been in operation now for two and a half years very successfully, but it did not do a good job in bringing buildings into the equation, and it seems that the EU trading scheme is going to have even less of an impact on that

sector.

But I'd like the committee to bear both points in mind. Yes, trading is a great idea, it can be very powerful as a market indicator, sending signals out where savings can be made.

But we must bear in mind that they're very important sectors that either need to be brought into schemes like that with specific measures to address them and their long development and use cycles, or we must remember that there are other policy tools, some policy tools haven't been discussed at all today -- information systems, encouragement for softer measures, a provision of training, and other tools of that kind which have been shown to be extremely effective in those sectors. Thanks very much.

MR. CAVANAGH: Mr. Chairman, if I could, for precisely the reason you identified California has not relied on trading. It's relied on an integrated package of energy efficiency standards and direct financial incentives supplied largely through the utility sector to try to improve efficiency in buildings.

I'm sure you know that. It sounds like you have other things in mind that you think we

should be doing. Like what?

MS. MULLIGAN: I'm aware of the improvements that Title 24 energy use standards for buildings that are going to come in next year. They make some very interesting moves towards improving efficiency, particularly in daylighting. But there are other aspects of building design.

For example, using thermal mass, using more appropriate natural ventilation, which really aren't encouraged by the standards as they exist at the moment as their proposed to be improved in the forthcoming cycle.

And I'd like to suggest that those are important and potentially impactful areas to look at, particularly in the types of software tools, for example, that are approved and promoted on the back of the Title 24 regulations.

COMMISSIONER BOYD: Thank you. This gentleman in the back here, did you have your hand up a while ago? Okay, you've been waiting quite awhile.

MR. SAN MARTIN: I just wanted to ask for some clarification, but -- I don't see Ned, perhaps other folks on the committee can answer this. I'm Greg San Martin, I'm with PG&E, and all

of the programs that we've done in the state on energy efficiency, renewables, codes and standards for building and appliances, Hadley implementation, they're all in statute I think or in some regulation.

So my question, following up on Ned's presentation, is to what extent under a national or international program are those reductions tradeable. Do they have value in those markets? And as we go forward, it seems to me that creating value for the reductions that we're achieving in this state, in the nation/state of California, ought to be a priority.

MR. HELM: The basic idea is you can't double count, so if you counted them once, you know, if you've already scored them toward a California target or a national target they can't be traded again.

You can only trade -- so let's say you're a company and your target is 100. If you emit 100 emissions that year you have nothing to trade. You've got to go below the target. So you emitted only 90, then you have 10 you can trade.

And the same thing with the car emissions. If Honda produced more efficient

vehicles, Prius's or whatever, so they came in well below their target, if the California law allowed it, they could sell the difference in what they should have been at, what their ceiling was, and what they achieved.

But that's the bottom line of any trading system. So if you included cars in your trading system, which you could, you know, you could have credits to the auto companies at certain levels, it's conceivable to do it, the basic bottom line is if Hadley required auto companies to get to level X they could only sell below X, whatever they cut below X by selling more Prius's and fewer four-runners or something, then they'd be able to do it. So, that clear?

COMMISSIONER BOYD: And I think, as a response, kind of a generic response, the California regulatory approach, in most arenas, is that if you make a reduction to meet an existing regulation it's just a reduction to meet the existing regulations, and it's banked to the benefit of the people.

if you go beyond that, there in some instances are mechanisms where you can take some credit for that. In the vehicle program, in the

just passed vehicle program, there were some provisions made.

In the, frankly, the incentive for people to join the currently voluntary Climate Action Registry and to do good things is to bet on the come that when we cross over some other threshold some day of requirement and regulation, people have got something in the bank that maybe they can use in such a scheme.

And usually most mini-regulations -- and I'm sure more regulations will start thinking about speaking to the point of meet the regulation you're fine but beyond the regulation you get some credit for it. I mean, it's part of the incentive approach.

Ben, did you want to say something?

MR. KNIGHT: I have a question for Ned. What's your opinion on cap and trade applied to fuel? Say petroleum. And if you think that's a good idea, where would you apply it?

MR. HELM: I think, in theory it's a good idea. And you could design an entire upstream program that basically regulated the coal broker, the natural gas distribution company, the refinery level, and set up your whole program

based on that, it would work fine. I mean, you'd basically be covering all of the fossil fuel is what you'd want to do.

The down side of it is the political one. The argument is that a company like a utility who has the ability to make some reductions is more likely to do it if the cap is on them than if they're just seeing a price signal from their coal or natural gas supplier.

And the economists will argue whether that's right or not, right? But in principle there's no reason why you couldn't set it, it's the simplest program of all. You'd have fewer entities to regulate, and you'd certainly get a price signal because, you know, you're a fuel supplier, the petroleum refinery would raise its prices until consumption declined to the level of this cap essentially, in theory.

Now, it has some political difficulties, you know, you're sending a big gas price impact and people would get upset about that. But in theory it works very well.

MS. DUXBURY: Now there's a question though, to sort of get at the question this gentleman asked about early action credit.

In a cap and trade if you do allocation on an output basis you to some degree can reward those who have tried to move to a lower carbon intensive or a non-emitting source, especially if you allowed allocation to renewables or other non-emitting sources.

And so that's one approach to try to not penalize those who acted before you set a baseline, or to capture earlier activity, isn't that correct?

MR. HELM: I think so. Another way to do it is if you auction credits, if you don't give any out for free, if you sell them all to the marketplace, to the people who are regulated, if I cut my emissions I don't need to buy as many credits as you do if you haven't cut your emissions.

So the easiest way to take care of people who've made early actions is basically to auction the credits. Again, there's all kinds of political issues about auctioning, but it's the most efficient way.

MS. PULLING: Can I just clarify one point on this very interesting question? Peggy, I think what you're saying is credit for early

action, and then the next wrinkle is I think what Greg was asking, which is what if the early action was in part driven by a compliance mandate. Where does a credit occur?

Let's take the renewable portfolio standard. It's mandatory for investor-owned utilities. Would an investor-owned utility generate a credit suitable for trading if that utility reaches the RPS early, or not? And I don't expect anybody to have the answer, but it gets interesting how you design these systems.

Does Europe have an answer to that?

MR. HELM: Europe actually has two markets. They have a renewable energy credit market and then they have the carbon market, and they have, you know, the prices sort of travel together in some ways because obviously making building renewables cuts my CO2's so I free up some CO2 allowances.

Now it would be interesting to see the market, both of them will be in play for the first time in January, so we'll see what happens. But they're two markets at the moment and different prices.

MR. RITSON: I have a question. Just as

an example, diesel cars in France have about 40 or 50 miles to the gallon. They are made practical by two things. One the high price of gasoline, they cost a little more. And second, clearly the environmental rules are different in France. And the third thing actually is the gasoline on the diesel is sulphur free in France.

I was wondering if there was just a trading system, clearly none of these things exist in California, and clearly one is simply going to transfer because it has a different environment. It can save you on CO2 emissions very heavily by their car regulations.

So I was wondering how the cap and trade works where you're going across different regulations, namely the regulations in one country make it possible to do something which you can't do in your own state?

MR. HELM: That's a nice question. Let's assume we had a California market for CO2, and it was recognized by Europe and they trade with you, you're right that in some sense the reductions in Europe might be generated partly by the cars, although actually they're not in the trading system, the transportation is outside the

trading system at the moment in Europe, so you wouldn't actually be trading with the diesel opportunity.

I could see a day though when that could happen, when they're talking about extending their trading system to transportation in the future. And if they did you could have a situation where diesel is encouraged, because they have weaker environmental standards and they don't have the same fuel, and those are CO2 credits, and they are, and genuinely you have saved CO2, but it has some other effects that don't happen here in the U.S., you know, but they happen in France.

That's always an issue, it comes up. A good example. There's a rule that, in the developing countries they cannot generate credits from nuclear projects and sell them in the CDM.

Yet, within Europe utilities have nuclear plants and the fact they have them means the utility that has more nuclear plants has less carbon to reduce, and so in effect some of that company's credits are generated by their nuclear plants, yet they have a double standard.

In Europe you can have nuclear, in Brazil you can't. It's just life, I mean, the

rules are slightly different and that's the way it goes.

MS. MOTAMEDI: Hi, I'm Lainie Motamedi with CPUC. And I wanted to make a couple of suggestions that might be useful to the group.

In talking through cap and trade and establishment of baselines for different industries it may be a good opportunity for you all to hear from the California Action Registry about the processes they're going through to develop protocols and establish those baselines.

They're going through the process with the utilities. All four large investor-owned utilities are members and are contributing to that process, as is Calpine I understand. So I think that would be useful. And I know that they're thinking while they are a voluntary program and they're not at all chartered to look at cap and trade, they get these questions all the time.

And I think that might be helpful to inform this debate, in how they're thinking about looking at California in a broader national participation and international participation in programs around the world.

And one question that I actually have

about establishing a baseline is something to think about. We brought up water in the context of a resource and implications for agriculture, capturing rainfall and accessibility, but right now when we look at California electric generation we just assume there's going to be hydro coming in from the Pacific Northwest.

And I think it's important to recognize the implications of reductions in water to our own generation of energy, and how that may increase the per capita and total consumption of GHG for the state. And I just want to raise that to the group.

The other suggestion I have is, in looking at the West Coast Governor's Initiative draft report they lay out a number of different measures that all three participating states have identified. And some of those are underway and others of those have stalled.

And it may be an opportunity to look at areas that have buy-in to move forward and do have associated GHG reductions for each state, and to really get some of those measures moving and to provide insight into all of your industries that you know so much about and where there may be low-

hanging fruit to start really hitting those emission targets as quickly as possible.

Because some of those areas need some catch-up, again from what I understand. So that report is readily available. I don't know if you all have had a chance to take a look at it.

And then secondly this process reminds me a little bit of what we went through with energy efficiency in establishing savings goals and targets. About a couple years ago there was a report that was issued that made it very clear to the Commission and to participants in the energy efficiency community that there was a lot of opportunity to do cost-effective energy efficiency work, and to take a look at how we might increase funding.

And energy efficiency was brought up earlier, and I just wanted to make it clear that, in addition to PGC funding that happens every year and that's collected by ratepayers, or from ratepayers by the utilities, the Commission and the utilities have worked very collaboratively to ensure that additional funding for energy efficiency, cost-effective energy efficiency programs are coming out of the procurement

dollars.

And I just wanted to convey that to you all in case you had concern that the PGC may not be enough. We agreed, and right now $115 million additional dollars have been spent, or are being spent, this year. And that number will increase, and will continue to increase, and we have commitment from the utilities that that should be the case.

That said, that's a low-hanging fruit, and the issue of cost-effectiveness -- I just want to get this all out on the table -- there's the issue of emerging technologies, and not just looking at what's cost-effective today. And how to really bring in new markets, new technologies, so that we're not just looking at what's cost-effective for the next two or three or five years, but thinking about what's cost-effective through investments, in the bigger picture.

And then one other thing I did want to mention. President Peevey did recently send a letter to all the CEO's of all the investor-owned utilities that we regulate -- water, telecommunication, railroad, and the large shuttle companies like Supershuttle -- to let them know

that we value and we identify climate change as being a significant issue.

And that we would like them to start taking note. And we would like to have a meeting in spring 2005 with all the utilities to hear about their thoughts on climate change and how to develop that into successful business practices, and what are the best ways to approach this issue within each industry and industry-wide.

And I wanted to again express that the PUC really does identify this as an important area for us to start thinking hard about, for all the industries, not just electric. So, that concludes, and thank you very much for listening and for convening this meeting today.

COMMISSIONER BOYD: Thank you to the PUC, one of our partners in the state Energy Action Plan.

MS. MOTAMEDI: Oh, one last thing. I do want to say we couldn't have done, couldn't have accomplished all that we did in the energy efficiency docket without the participation of the CEC. They've been so helpful for us. I did want to make it clear, it's been a joint collaboration.

COMMISSIONER BOYD: And nobody in this

room knows more about all of this than the gentleman to my left here, Mr. Cavanagh.

MR. CAVANAGH: And actually, if you'll allow me, Mr. Chairman. One of the reasons the PUC clearly and properly cares about climate is Lainie herself. Lainie, I think I wanted to underscore something Susan mentioned earlier but, you don't have to say anything more if I'm right about this.

I believe you're about to come out with a major new set of policies about how to take climate risk into account in resource procurement for the utilities. We'll want to look at that. That'll happen between now and probably our next meeting.

Ned, when you redo this presentation, something she said that is so important. What California is doing that the other states in the Northeast have not been able to do, and this is something to take back to them, they really are locked into the system benefits charge approach to efficiency.

That's what they spend. They treat it as a tax on electricity , I think that's even how you referred to it, that's what they spend on

efficiency.

In California the re-integration of efficiency and the resource procurement for the utilities really has happened. And it means that the efficiency investment is going well beyond the minimum systems benefits charges.

As Lainie described, this is a crucial step that still needs to come in Oregon. Where my Oregon colleagues will recognize that as an issue that the Oregon commission has just framed for decision in the state, in part because I hope the tri-state initiative has put it on the agenda.

But the availability of the option of re-integrating energy efficiency as a resource procurement priority in the utility sector, regrettably lost in the Northeast for a time, we hope not forever. Please take back the fact that it is alive and well and reviving in the west.

COMMISSIONER BOYD: Thank you. Yes sir.

MR. HAKKARINEN: Thank you very much. My name is Chuck Hakkarinen, and I previously worked as the research manager for all the climate science and modeling research that was done at the Electric Power Research Institute.

Now retired, and I have first an answer

for the question that Mr. Margolis raised earlier regarding what level of reduction in emissions is required to meet the low emissions scenario, and also a request to the committee based on the answer to that question.

In addition to managing most of the research that was done on global and regional climate modeling, such as cyclical downscaling, abrupt climate change, etc., that served as much as a background for the Commission's own research efforts on that in the last several years, I also worked, for the last ten years, as one of the chief technical reviewers of the National Science Foundation's dedicated supercomputer for climate modeling, which they operate at NCAR.

And during the last IPCC assessment, the third one, I was a designated lead author/reviewer at the sessions in Shanghai.

I checked my answer to the question with Professor Hanneman during a potty break while you were all working, and he confirmed what I told him then, the issue of what emission reduction is required to get the low emission scenario in the California scenario work, you also expressed it as the B1 scenario, is basically a 70 percent

reduction in global emissions by the year 2200.

That produces a stabilized CO2 concentration of 550 parts per million, in the year 2200, approximately 50 percent higher than what they are today. There are 13 countries in the world who emit 70 percent of the emissions. I think they're listed up on that chart. The other 153 countries in the world emit the other 30 percent.

So there's actually a range of answers to the question. One would be if you had the 13 largest countries reduce their emissions to zero, and the other 153 held their emissions constant, their emissions today, you would achieve that 70 percent reduction.

So the first answer for you is California needs to reduce their emissions by 100 percent by the year 2200. The other way to do it would be to have the other 153 countries reduce their emissions to zero, and then the 13 countries left over have to reduce their emissions about 55 percent. So the other answer at the low end is 55 percent reduction by California by the year 2200.

Either way, that stabilizes concentrations at 550 parts per million,

substantially higher than they are today, so therefore there will be substantial climate change in that time period regardless of which of those emission scenarios are followed.

And so my concern, question, request to the committee is that, regardless of what path is taken on emissions there's going to be substantial climate change in the next 50, 100, 200 years.

And for the remaining 70 years of my life I would like to -- I'm going to live to 125 by the way, because that's what my financial advisor says my money will last to in my retirement plan -- so my request to the committee is that, given there's going to be very substantial climate change over the rest of my life at least, I would urge you to spend substantially greater effort in developing recommendations for the state government and for citizens like me in the state of California.

Now, as to how we can adapt and adjust to the inevitable climate change that will occur during those next 70 years. Thank you.

COMMISSIONER BOYD: Thank you. Any other members of the audience like to make a comment, now that we've worked our way into the

public comment period? Is there anyone out listening on the webcast who would like to ask a question or make a comment? Or did we turn them off thanks to the static. Wait until we turn you back on. The noise got intolerable a while ago.

Is there anyone listening on the webcast who would like to ask a question or make a statement? Well, hearing none, there's cards back on the table and I'll go back to the advisory committee, and Jason?

MR. MARK: Just a quick response to the last comment, which I think is very helpful. It clearly identifies, as did the lunchtime presentation, clarifies that there is climate change underway, and that a certain amount is unstoppable at this point. And it suggests that adaptation strategies ought to be a priority.

Whether or not they ought to be our sole priority, I guess, is a perspective that I would challenge. In particular, I think that the specific conclusion of the scientific analysis that was conducted, that was published in the proceedings of the National Academy of Sciences, suggests that there is a very bad scenario that we ought to consider avoiding, and that avoiding that

very bad scenario suggests taking action today to address it, because of the sort of normal lag in the impact of climate change.

And so, while yes we certainly need to begin thinking about what our water system looks like under a changed climate, what our electric power grid looks like with warmer summer temperatures in California, we also ought to be thinking about strategies to avoid the very worst outcomes, which suggest investments today on mitigation path as well.

COMMISSIONER BOYD: Abby?

MS. YOUNG: I just wanted to mention, I thought that was very interesting, the numbers that you assigned to the B1 scenario. But you also commented on how that is getting us up to basically a huge amount of increase. And so, that's not even getting at stabilizing climate within the next 200 years.

One thing that the New England Governors eastern Canadian premiers, in their cross-border effort at addressing global climate change, have done is they have looked at setting a regional target. And again I know that that's not our task, but the approach that they have taken is a

phased in target, where they're saying, you know -- and I'm getting this a little bit wrong -- but basically something along the lines of a 20 percent reduction below 1990 levels by 2030.

But the end result is a 70 to 80 percent reduction in emissions below baseline levels by the end of this century. And that is something that all the states and eastern Canadian provinces individually are endorsing. And so that's one way that target setting can be gone about.

And in our context that could be a way that we think about the guidance that we provide the state in terms of how the state moves forward from where we leave off our task, thinking about that kind of long-term phased in approach.

COMMISSIONER BOYD: Bud?

MR. BEEBE: Two issues, the first is I was looking through my notes and I realized that the record might show, and I think incorrectly, this was a comment to Michael Hanneman's presentation, where he had 49 percent from the transportation sector in California being greenhouse gas emissions, and 30 percent from the electric power utility.

I think those numbers aren't quite

right. The numbers I remember are something like 12 to 15 percent for in California emissions from electric utilities, and maybe 22 percent if you include out of state, but -- let me get there, okay, let me get there.

And a lot of this has to do with the way that you include or do not include independent power, and industry that has electric making capability as well. Also, the transportation sector itself, at which he had up there 49 percent and that's a fine number, but if you include refineries then that gets bumped to like about the 59 percent, if I remember Mr. Franco's numbers from 1999.

So I think we should check those numbers to see what they are. The important thing to me, though, is let's not say that just those two pieces are 80 percent of the problem, because I think that might lead people who have not invested this much time as all of us have on this issue to try to simplify the thing too much.

So let's either amplify the list of people and industries who need to be a part of this thing, and make sure that everybody's on the list, or at least correct, with footnotes or

whatever needs to be done, to show what those two numbers that are on Michael's slides would be. That was just for the record.

The second thing is to underscore the importance of the built environment, and what happens when you put a building in. I think that the person from UC Berkeley had a very good point about some of these investments we make last longer than others and have a greater impact, and maybe this is a challenge for the economists, to figure out some way that we can have a present worth for future emissions.

We need to come up with some sort of metric like that. There are similar mechanisms in the CDM and JI that people have talked about. These are very cumbersome and difficult and always contentious. But just a challenge to come up with some way that, when we make decisions that have importance of long life that those decisions should incorporate the impact on emissions in the future.

COMMISSIONER BOYD: Robert?

MR. PARKHURST: It sounds to me, I've heard a theme sort of circle around over the last couple of hours, and it started with Ned's

presentation, and Bud just said it one more time. Broadening the baseline and looking at an inventory on a broader level than what we're currently doing.

One of the suggestions that he had was to have a mandatory inventory in the state of California, which I think would get at some of the, give us a better understanding of where the gains need to be made and where some of the improvements need to be made. I think that is something that we should consider as a committee going forward.

COMMISSIONER BOYD: We have a mandatory inventory, the Energy Commission has to do one every so many years, we're working on the next one right now. But what we don't have, maybe what you meant is, we don't have mandatory reporting. We have voluntary reporting, and then we do the best we can with everything else.

MR. PARKHURST: I do agree with that, with mandatory reporting.

COMMISSIONER BOYD: The other comment I guess I want to make is, I know we absolutely buried you all in tons of material, particularly at the last meeting and before the last meeting.

And even I'm losing track of al the material. I mean, we have incredibly indepth inventories, and we can answer, already existing and I'm not sure whether they've already been distributed, we can distribute them.

It breaks down, you know, disaggregates inventory pretty finely, so you'd have answers to a lot of the questions raised today, plus the representative of the PUC mentioned the draft of the three states initiative, I think we provided that in that first dump of material that we provided you.

However, the final report is done, but its' going through the signature process right now and may or may not be available very shortly, since they want to get it out the door this month. I think it will be available to us very shortly, and we'll have benefit of that. And there was one other point of information available that I've forgotten now, but in any event --.

One of our problems will be to go back on all we do have and sift and sort a little bit. All right. Howard?

MR. GOLLAY: Just to put something to a closure here. The point about putting utilities

indirect emissions from outside the stream, I think the Registry requires that. And, so, as a matter of fact we are reporting emissions from inside the state and outside the state.

And to show you the importance of that, and I'll support Ralph on this one is, practically speaking, Edison has zero emissions within the state of California. Practically speaking we have zero emissions. The millions of emissions that we do have are outside the state. So, that's one point.

The second point, building on what Bud was saying, it's a very good point. We shouldn't get mesmerized by an idea that some sector has 50 percent and some sector has 30 percent, because there could be low-hanging fruit anywhere.

And to give you an example, in the electric utilities sector for example, sulfuric fluoride, which is an insulating gas, is a potent -- it's called SF6, it's a potent gas -- very few percent of the total CO2 emission reductions come from SF6 gas.

However, there's a tremendous opportunity to reduce the emissions from SF6 gas. And for Edison and some other utilities around

here who are partners with the USEPA, we've reduced the SF6 emissions by 20-some percent. I know PG&E's done a very good job as well.

And not only that, that's actually been a cost savings for our company as well, from not having to purchase SF6 gas. So my whole point here is that, the idea of low-hanging fruit, we should look across all the sectors for that.

COMMISSIONER BOYD: It's a good point, and for instance methane is far more reactive than CO2, we all talk about CO2. A lot has been done, and I think more is being done to control fugitive emissions in that arena. But again we need data.

Any other public or committee comment before we move on? Let me stop, Pierre, Dr. duVair, the point made about the Registry and the work they're doing on various protocols and what have you.

Is there anything you want to add, since you do all the spade work for the work that they're doing, is there any, building on the PUC comments, is there anything going on there that would add to today's knowledge base that would be helpful versus having a separate presentation sometime in the future?

MR. DUVAIR: No, I'd probably just want to clarify that, right now the Registry is a voluntary Registry and they are struggling for participation. The power sector does happen to be the one sector that is very well represented, and a few of the most recent members are some of the public utilities.

But BP is the only oil company currently a member of the Registry. And for a variety of reasons I think they are struggling with participation. And what we've kind of heard consistently across everyone here is the desire and the recognition that we need a very sound greenhouse gas accounting system.

There's been a number of you that have called for a mandatory reporting, it might be the way to standardize that and get the most comprehensive approach to greenhouse gas accounting. We at the Energy Commission do the top down, we rely heavily on data reported to the EIA, the DOE data. There's a lot of problems with our top down inventory.

A bottoms up, comprehensive inventory would be the best way to get a handle on what the state's emissions are, and the trends in

particular resources. And so, you know, we at the Energy Commission are trying to improve where we can our statewide inventory.

The issue of land use change in California, because we're developing so much land now and how does that affect greenhouse gas emissions is an important area. The Department of Forestry is working with us to identify changes in landscapes throughout the whole state. So we have a lot of areas where you need to improve the statewide emissions inventory from the top down.

The Registry is really trying to develop protocols for entity-wide emissions for a bottom up inventory, and that's been the contribution that they've brought over the last couple of years, looking down at the individual organizational level, what their emissions are.

But unfortunately the participation has been fairly limited in the Registry.

COMMISSIONER BOYD: Thank you, Pierre. Okay, turning to the last item on the agenda, which is conclusions and next steps. I want to go back to some of the issues we put on the table at the beginning of the day, as well as hear from you with regard to any added issues.

One of the issues, of course, was the idea of subcommittees or topic areas with lead persons, in order to perhaps more easily and readily handle the volumes of information and data that are being put upon us. So I put that on the table as one of the things we broached early, and it would be nice to close on today.

We could change -- the letter made some suggestions, there are many other approaches. We could go through end use sectors and create a few groups, have lead persons and engage in more telephone conference calls on subjects for the end use, subjects where everybody in the committee is invited to participate it. So, I'll toss that out first.

Second on my list is scheduling a committee-wide phone call, perhaps in early November to hear from any "subcommittees" or leads that we deal with today, and then talk more formally about the next quarterly meeting. Quarterly would come roughly in early December for us.

So I'm just going to drop those issues on the table, and I'll also say that, once again, the staff will try to -- and more quickly this

time -- try to generate a summary of what it is you decide and the other key comments we pick up today, and have it in time for any first phone call meeting we choose to have as a group in advance of a quarterly get-together here.

So I throw those out as kind of business we put on the table today, and some responses there too. And I'd like to hear from others of you on the subject. And Ralph, you're quick to --

MR. CAVANAGH: Mr. Chairman, in the spirit of your remarks, I take it it's time to get down to work. And I'm prepared to do that. I think an immediate item of business for this group, if we can do it, we talked about it, is to see if we can get some kind of positive closure on the recommendations going back to the three governors initiative.

That's, I take it you'll be ready, Susan, to have something to circulate fairly soon? Yes, so you've got to get the okay, I just want the members to be ready for that, because i think the effort there is to get something back to the governors relatively quickly.

The original objective, I think as you described it, was in October, Susan, so I'm

assuming that may be relatively quickly.

COMMISSIONER BOYD: Susan, is it safe to say that if Susan referred back to the draft report they'd get very good guidance?

Basic question, is it worth reading the draft, or wait for the final report?

MS. BROWN: Wait for the final report, I think the draft papers that were in your binders for the last meeting were really the narrower issues.

I think the issues of more interest to us would be whether or not the three governors can endorse the establishment of a regional goal, consider common standards in areas like buildings or vehicles, investigate and explore regional carbon allowances and those type of things that are being put forward to the governors for some kind of action.

MR. CAVANAGH: It's important to hear from this group about that. You're going to have to move quickly, I hope we do that. I also, Abby laid out, I thought with wonderful clarity and summed up well for all of us, with the discussion of scenarios that would be helpful to look at in terms of some of the different implications of

some of these recommendations.

It's my hope that some of the work for the three state governors will allow that to move forward relatively quickly.

MS. BROWN: Plus work that Ned Helm and CCAP as well, which is complimentary.

MR. CAVANAGH: Yes, so that's great news, that'll be coming soon. I would just say, Jim, as far as the subcommittees go, there's obviously interest around the table in having topics selected for further work.

For my part, you and your excellent staff deferred the discussion today, and I'd be happy to let you all take a crack at what you think would be the best division of labor, since after all we're advising you in the final analysis, so I want to know where you think the key issues are.

I will tell you there is one issue that has not been mentioned today, that I emphasized last time and that I would like to try to keep on the table for this group. And that is the adequacy of the institutional resources in the principle public sector institutions in California that are going to be called upon to do this work.

And my sense of urgency about that is heightened by the fact that there is a lot of talk about government reorganization now -- which he probably can't say anything about at all -- but which we as his advisors can at least ask to weigh in on.

On the specific question of, as we look forward to what California is going to need to do on climate, does the Energy Commission have what it needs, does the PUC have what it needs, are there any other things that we think are likely to be needed.

And I will volunteer to help with that part of it if the group, in its wisdom, is willing to have that stay on the list. It's not something -- the Energy Commission is part of the administration. It is not possible, and i understand this, for you to raise these issues.

The administration is looking at a reorganization plan. But it seems to me you can't think about California's future and climate without thinking about the public sector institutions that you're going to need to deliver whatever benefits, mechanisms, regulations or trading systems that you're planning to recommend.

So I just hope that stays on our list and is part of our final deliberations.

COMMISSIONER BOYD: Thank you. Many of us are curious about which boxes are going to get blown up and which ones aren't. And I share with you practically all I know, and that's about it.

As you all know, the advisory committee was created to give the Governor advice, and that subject is just completed, those hearings, and everybody awaits their recommendations. And yes, we inside government have put forward our thoughts and recommendations, and no, I can't share them.

MR. CAVANAGH: Well, would there be some value in hearing from this group on what we think they might be?

MS. YOUNG: Can I help answer that? In working with local governments across the board, those local governments that have excelled in moving forward and implementing activities that reduce greenhouse gas emissions are those that have dedicated resources to paying attention to this issue, coordinating efforts within their municipal government, and creating the long-term vision for continuing to implement this stuff over the long term.

I would just say that -- maybe it's hard for you to answer, Commissioner Boyd -- but I think that's critical. And that is watt a big part of what I meant when I was talking about advising on ongoing process. So, I don't know, I just heartily concur.

MR. CAVANAGH: That's a helpful reminder. And that may help us to do this without roiling too many people.

COMMISSIONER BOYD: Well, I think it's safe to say that, like so many areas of government, the government just doesn't have enough resources. This is certainly a more newly discovered area, and obviously doesn't have enough resources.

The Energy Commission just pulled it out of its own thin hide and put more people into the subject area, as I think some other areas are, but there's strain everywhere. The financial status of the state of California the last few years certainly haven't helped lots of program areas that need attention, but we'll see where the future takes us.

And I guess I've lost my train of thought. Cynthia?

MS. CORY: In an effort to kind of think of next steps and where we go from here, I think a number of people have suggested, and I think it makes a lot of sense that we follow the New York approach, and first off do the baseline. And they like the way you laid it out.

And what I think we do then is find people who are interested, and then we break down to the different sectors. Maybe not these ones exactly, but it certainly seems like places we need to start, when we look at transportation, electricity, buildings, industry, ag, and forestry.

And just, you know, within the group, we're going to kind of fall into the the groups we have specific interest in. They talk about a bottom up top down, I think the top down is getting the baseline, and then the bottom up is getting the people that are interested in these different groups.

And if we don't have people that are interested in those groups we need to maybe find people who are interested in those groups. And then, looking at mitigation measures that might fall into those, and if we don't have the science,

at least look at what's out there, as far as methane digesters.

A lot of people have been doing it, I was talking to people at the Energy Commission, and there's ways to try and find out enough information to maybe make some decisions about cost-effectiveness and usefulness, and how they would fit into these different, you know, one, two and three levels.

I think that would at least be a short term, kind of getting us to December, and hopefully Josh would feel happy that we've accomplished something, if we've done that. I think that would be a big step.

COMMISSIONER BOYD: The only additional thought I think we had, in looking at the New York example, is maybe if you took that approach, kind of end use sectors, transportation, ag, and forestry, that business and commerce and what have you would maybe be another group that kind of takes a multi sector cross-cutting look as well, because there are synergisms, and there are things that just cut across multiple sectors that don't get specific.

But that's kind of another thinking we

had, entering into today's discussion. And I guess, if we don't reach a consensus today we'll try to distill something, and we'll give you a strong suggestion. I'm less and less enamored with what was in my letter and more and more interested in this subject matter approach. Josh?

MR. MARGOLIS: Ned, you've been here before, you've seen it, what would you recommend? What's the most efficient, most productive path with the talents you see around this table, and from what you understand we're trying to do?

MR. HELM: I think you're on the right track. I think working groups, like you talked about, are right. And I think picking the sectors where you don't have the data, like Cynthia talking about biodigesters, is real important. Picking those things, a lot of the this stuff you can look at other states, or look at big picture numbers.

But some of this stuff is very California specific, and that's where I'd put the bulk of the work. To be sure you looked at natural gas, you know, compressor stations, some of the ag things, those are some places that we don't usually look that are really important

opportunities. But I think the basic process is right.

MS. BROWN: I also want to add, Commissioner Boyd, that by our next meeting -- and we're thinking early December, if that is agreeable to the group -- Ned and his staff are working with us and others to put some numbers around some of these measures and show the range of probable GHG reductions, relative costs, benefits, etcs.

And I'm hoping we can display that as well as some of the scenarios that some of you requested today. Because we have the raw information, we just need to put it together.

I would like to suggest a conference call the first week of November for industry members, if all of you don't want to participate that's fine too.

But the goal of that will be to get -- we'll come up with some kind of proposal on how to slice and dice the work and get it out to you, I'll commit in probably the next two or three weeks is probably likely, and then I was going to suggest we have a conference call and set the agenda for a December meeting and move this

forward.

Because I think we got the kind of input we needed today. It's very hard in this diverse of a group to get everybody's ideas succinctly on the table, but I think we have a pretty good sense, and with Ned's help I think we can come up with a good decisionmaking structure.

MR. HELM: I think an early signal from you guys, where you've got data and you can help is really important. Because the work groups only work --

MS. BROWN: Yes. And it might involve another round of calls from staff one on one with all of you, and we're more than willing to do that.

MR. MARGOLIS: I'd like to suggest also something that my on the surface seem audacious, but I think has some practicality to it at the same time. I would like to see the beginnings of the final report. I'd like to see it started now.

And there's no way of course that it's going to look the way it's going to look at the end of the year right now, but it will serve as a lightning rod or a gathering place, a water cooler, around which people can gather and say

yup, there seems to be a consensus on these points, these other points need to be fleshed out.

So, you call it a straw man, call it what you will. But it's a draft of what will eventually emerge.

MS. DUXBURY: Or even just doing an outline of how we think the table of contents might look in the final report, so that we know which items might raise red flags for certain members of the advisory group and which ones we all agree on. I think that's a good idea.

COMMISSIONER BOYD: We do a lot of that, Susan --

MS. BROWN: We can take at stab at it, sure.

MR. MARGOLIS: So we can count on staff to do that?

MS. BROWN: I think so.

MR. MARGOLIS: Cool.

COMMISSIONER BOYD: I think, though, building upon Susan's comment a moment ago about some telephone calls to you as individuals will be absolutely necessary to do that in a way that won't provoke so much discussion at our next, whenever we talk about it that that's all we do.

It's a two way street, so expect some phone calls on that point.

MR. MARGOLIS: Susan, can you at this point establish a schedule, at least the first phone call?

MS. BROWN: Yes, I would propose the first week in November. That would give us enough time to absorb what we heard today, and do some of the planning on what's possible. I would propose November 8th or 9th, about then. I don't know if you all have your calendars handy --

MR. MARGOLIS: So the 8th is a Monday, the 9th is a Tuesday.

MS. BROWN: Tuesday or Wednesday of that week would work, I'm sure.

MS. CORY: Is Tuesday the election day?

MS. BROWN: No, isn't the 2nd election day? No, I meant the 9th.

MR. CAVANAGH: The afternoon of election day is usually a time to not schedule, and we are not engaged in a partisan exercise here. So, as I think about the week, which looks perfectly ghastly to me --

MS. BROWN: I'm just picking a date that gives me time to organize everything and get the

feedback and get the transcripts and have our staff team put our heads together with Ned and our other consultants that are available to us, and come up with a good --.

I've heard a suggestion that we have, what, a structure for working groups, do you want that? Do you want options? I think I know where some of your interests are, because I've talked to some of you on the phone. So I'm willing to put forward a proposal as well as a straw man outline of what a report might look like. I think it's a start.

And then I'll work with Ned on the scenarios we talked about, and we have other help from other folks that have done work for the tri-state that I'm hoping to tap as soon as we get their attention. So i think we can do that. So I'm shooting for November 9th, back to November 9th, Ralph, and not November 2nd?

MR. CAVANAGH: Let's try it.

MS. BROWN: Okay, a preferred time? 10:00 a.m.? I don't know Commissioner Boyd's schedule. I'm just picking it out of the air.

MR. CAVANAGH: As late as you can that day.

MS. BROWN: Okay. How about 2:00, 3:00? 2:00? Okay. I'll send a confirming e-mail.

And then, Ned has requested the first week in December, since his staff will already be out in California for another venue, so we're looking at a possible date for a meeting of December 3rd or 4th?

Oh, okay, November 30th or December 3rd.

MS. PULLING: Mr. Chairman, can I just make an offer that if you are interested in having another meeting in the Bay Area, we have PG&E's Pacific Energy Center in San Francisco, which would be happy to host the meeting. There's a number of very interesting displays on energy efficiency, some of the very things people have been talking about today.

So, I put that out on the table for either the December or any future meeting. We're happy to host it.

COMMISSIONER BOYD: I appreciate that. Is there any, we've met in Sacramento, we've met in the Bay Area. Does anyone want the southern part of the state next time around, or would you just assume --? I guess there's more north than south, the people here.

MS. BROWN: Is San Francisco acceptable to the group then? Thank you, Wendy, we'll take you up on your offer.

MS. PULLING: I just need, the caveat, I just need to check the dates.

MS. BROWN: Right. Let me check Commissioner's calendar, and we'll put some dates out in e-mail, and lock those in.

Is there anything else we need to decide? We have a conference call in November, a meeting in December. We have some staff work to do. When the Tri-State Initiative is approved for release we'll get it out to all of you.

COMMISSIONER BOYD: All right. Anything else for the good of the organization? Again, I want to thank Robert and HP for being a host today. This is a very nice room, and it's worked out quite well.

I want to thank Ned in particular for one, coming all the way across country. And number two, as Susan said, he's working with us. Susan said gratis, and it is, it's not costing us anything.

Ned got a grant from the Goldman Foundation to work on climate change in

California, and he's therefore using that opportunity to work with us on that issue. So we very much appreciate that resource, as well as him taking that opportunity.

Any other comments? if not, thank you everybody. Have a safe drive home. Driving to San Francisco, next time you'll need I think three in the car to get to the carpool lane. Those of you flying up, though --. Thank you.

(Thereupon, the meeting was adjourned at 4:22 p.m.)

CERTIFICATE OF REPORTER

I, JAMES RAMOS, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Meeting; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 22nd day of October, 2004.